SURVEY OF REGULATED APPLIANCES

FINAL REPORT

CONSULTANT REPORT

Prepared For:
California Energy Commission

Prepared By:
Itron, Inc.

Survey of Regulated Appliances
Final Report

Contract No. 400-02-011

Submitted to:

California Energy Commission
1516 Ninth Street
Sacramento, California 95814

Submitted by:

Itron, Inc.
11236 El Camino Real
San Diego, California 92130
(858) 481-0081

January 24, 2005

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Overview

The Survey of Regulated Appliances encompassed work for 13 appliance groups. The goals of this project are as follows:

- To establish the current models numbers listed in the Commission database,
- To ascertain the accuracy of the information for the aforementioned models,
- To determine the model numbers available for sale in California, and
- To conclude which models are missing from the Commission database.

To achieve these goals, the project team created Excel spreadsheets containing the information found through survey efforts. These spreadsheets will be referred to as databases throughout the remainder of this report.

The remainder of this report contains sections detailing database construction, overall observations of the process, a group-by-group narrative, and recommendations for the California Energy Commission to ease the process for future appliance database updates.

1.1 Database Construction

The databases contain the information sought by the Commission in order to determine compliance with current regulation for most of the 13 appliance groups. However, there are some appliances included in the study not previously tracked by the Commission. The project team handled these appliances in a slightly different manner, as there was no Commission database available for comparison. The databases are detailed throughout this section.

Appliance Groups with Pre-Existing Commission Databases

For appliance types for which the Commission had previously obtained data, the project team built two sets of databases. Originally, these databases were titled as follows:

- **Project Team Database.** This database contained all the models that the project team found for sale in California, plus the model numbers in the Commission database.

- **CEC Indicator Database.** This database focused on the models listed in the Commission's active appliance database and indicated whether the data reported to the Commission were verified through other sources or if the team found questionable data.

The database names were changed after a conference call in July, specifically to eliminate confusion as to what information is contained within the different databases. This change should ease the use and increase the value of these databases. Only the labeling was affected by this decision; the information contained within the databases is the same. Table 1-1 details the names of the databases and the information that they respectively contain.

Table 1-1: Database Name Change

Former Database Name	Current Database Name	Information Contained Within Database
Project Team Database	All Models Numbers Found Available for Sale in California	Lists all models that the project team found for sale in California plus the model numbers in the Commission database
CEC Indicator Database	Corrected and/or Verified Information for Model Numbers in Existing Commission Database	Indicates whether the data reported to the Commission for models listed in the active appliance database was verified through other sources or if the team found questionable data

Appliance Groups without Pre-Existing Commission Databases

For appliance types without any pre-existing Commission database, the team created one database containing all the model numbers found available for sale to any buyer located within California. This database was titled *All Models Numbers Found Available for Sale in California*. Again, the only difference between the "All Models" databases and the others is the lack of model numbers included in the Commission databases.

Database Development

The preparation of the survey databases involved several subtasks:

- Data were entered by Itron administrative staff,

- Itron conducted quality assurance on all information entered,

- Draft databases and documentation were prepared and submitted for review on Groups B-E, and G, and

- A final database and documentation has been prepared and submitted.

The information contained within the appliance databases was obtained through several different methods, including extensive research on the Internet, site visits throughout

Southern California, and calls to manufacturers. The project team endeavored to make the databases as comprehensive as feasible.

The number of site visits conducted for each group can be found in Table 1-2. Appendix R lists the names of the retailers and distributors visited, along with their contact information

Table 1-2: Site Visit Quantity by Appliance Group

Group	Group Title	Number of Site Visits
A	Commercial Refrigerators and Freezers	7
B	Refrigerated Canned and Bottled Beverage Vending Machines	7
C	Infrared Gas Space Heaters	1
D	Commercial Clothes Washers	4
E	Food Service Cooking Equipment and Patio Heaters	7 (Food Srvc) 6 (Patio Htrs)
F	Ballasts Designed for Use With T5 or T8 fluorescent lamps	0
G	Heat Pump Water Heaters, Hot Water Dispensers, and Mini-Tank Electric Water Heaters	10 (HWDs) 5 (Mini-Tank)
H	Tub Spout Diverters	10
I	Traffic Signals, Exit Signs and Luminaires	8 (Luminaires Only)
J	Transformers	0
K	Spot Air Conditioners, Ground Source Heat Pumps, Ground Water Source Heat Pumps, Gas Air Conditioners, and Computer Room Air Conditioners	0
L	Non-Packaged Boilers	0
M	Small Gas Furnaces Designed for Use With a Three Phase Electrical Supply	0

Database Structure

Each appliance group has a spreadsheet containing multiple worksheets. The naming criteria for the worksheets are standardized. Each appliance group's worksheets begin with the group letter (A-M). Then, the abbreviated name of the appliance follows. After the name or appliance abbreviation, is the keyword that explain the information found on the worksheet.

There are three main keywords.

- Allmodels
- Corrected
- Manufact

Two keywords correspond to the database names requested by the Commission listed in Table 1-1, i.e., Allmodels and Corrected. Where applicable, the Allmodels sheet includes a column that indicates whether or not a model number was included in the Commission database for that particular group. This column is not present in Allmodels sheets for groups with no previous Commission database. It is worth noting that since the Commission databases are constantly updated, some model numbers missing from the Commission databases may have been reported to the Commission prior to the publication of the final report. The sheet with "Manufact" in the name contains manufacturer information requested by the Commission. Although not originally included in the scope of work, these data were added at the request of the project manager. This worksheet also contains a column indicating which worksheets contain information from the manufacturer. The one exception is for appliances without prior Commission databases, where there are only "Allmodels" and "Manufact" worksheets.

Table 1-3 clarifies the worksheet naming process. It illustrates how the group letter, name, description, and worksheet name correlate.

Due to the multitude of appliance types and groups, the team reinstituted the type designation for all appliances included in this survey. Table 1-3 also illustrates the codes and their corresponding appliance group and type. Many of the codes created stem from the type codes formerly used by the Commission. In several cases, the project team found it necessary to generate these codes. The project team chose arbitrarily. Therefore, the Commission should feel free to change or do away with these codes as is appropriate. The volume of data included in the Survey of Regulated Appliances necessitated the addition of these codes as another check on the data contained within the databases.

Table 1-3: Worksheet Name Clarification and Appliances Type Codes

Group	Group Title	Description	Worksheet Name	Type Code
A	Commercial Refrigerators and Freezers	Refrigerator	REF	REF
A	Commercial Refrigerators and Freezers	Freezer	FRZ	FRZ
A	Commercial Refrigerators and Freezers	Refrigerator/FreezerUnit	RF Dual	RF Dual
A	Commercial Refrigerators and Freezers	Refrigerator with Heating Portion	RF Heat	RF Heat
B	Refrigerated Canned and Bottled Beverage Vending Machines	Refrigerated/Frozen Vending Machine	RefrigVend	VND
C	Infrared Gas Space Heaters	Infrared Gas Space Heaters	InfrGasSpcHtr	IGSH
D	Commercial Clothes Washers	Commercial Clothes Washers	CommWashers	CMW
E	Food Service Cooking Equipment and Patio Heaters	Range/Oven Combination Units	Food Service_ RangeOven	R/O
E	Food Service Cooking Equipment and Patio Heaters	Oven Only Units	Food Service_OvenOnly	OVN
E	Food Service Cooking Equipment and Patio Heaters	Range Only Units	Food Service_RangeOnly	RNG
E	Food Service Cooking Equipment and Patio Heaters	Hot Food Holding Cabinets	Food Service_HotFdHold	HDC
E	Food Service Cooking Equipment and Patio Heaters	Proofer	Food Service_HotFdHold	PRFR
E	Food Service Cooking Equipment and Patio Heaters	Patio Heaters	PatioHeaters	PH
F	Ballasts Designed for Use With T5 or T8 Fluorescent Lamps	Ballasts	BLST	BLST
G	Heat Pump Water Heaters, Hot Water Dispensers, and Mini-Tank Electric Water Heaters	Heat Pump Water Heaters	HPWH	HPWH
G	Heat Pump Water Heaters, Hot Water Dispensers, and Mini-Tank Electric Water Heaters	Hot Water Dispenser	HotWaterDisp	HWD
G	Heat Pump Water Heaters, Hot Water Dispensers, and Mini-Tank Electric Water Heaters	Mini-Tank Electric Water Heater	MiniTankWH	MWH
H	Tub Spout Diverters	Tub Spout Diverters	TubSpout	TSD
I	Traffic Signals, Exit Signs and Luminaires	Traffic Signals	TS	TS
I	Traffic Signals, Exit Signs and Luminaires	Exit Signs	Exit	EX
I	Traffic Signals, Exit Signs and Luminaires	Luminaires/Torchieres	TCH	TCH
J	Transformers	Transformers	Transformers	TRS
K	Spot Air Conditioners, Ground Source Heat Pumps, Ground Water Source Heat Pumps, Gas Air Conditioners, and Computer Room Air Conditioners	Spot Air Conditioners	SpotAC	SpotAC
K	Spot Air Conditioners, Ground Source Heat Pumps, Ground Water Source Heat Pumps, Gas Air Conditioners, and Computer Room Air Conditioners	Ground Source Heat Pumps	GrdSrcHP	GSHP
K	Spot Air Conditioners, Ground Source Heat Pumps, Ground Water Source Heat Pumps, Gas Air Conditioners, and Computer Room Air Conditioners	Ground Water Source Heat Pumps	GrdWtrSrcHP	GWSHP
K	Spot Air Conditioners, Ground Source Heat Pumps, Ground Water Source Heat Pumps, Gas Air Conditioners, and Computer Room Air Conditioners	Gas Air Conditioners	None Found	None Found
K	Spot Air Conditioners, Ground Source Heat Pumps, Ground Water Source Heat Pumps, Gas Air Conditioners, and Computer Room Air Conditioners	Computer Room Air Conditioners	CompRoomAC	CompAC
L	Non-Packaged Boilers	Non-Packaged Boilers	NonPkg_Boilers	NPB
M	Small Gas Furnaces Designed for Use With a Three Phase Electrical Supply	Small Gas Furnaces	SmlGasFurnace	GSF

Manufacturer Information

Although the Commission has an established list of manufacturer and brand name codes, the addition of multiple manufacturers and brand names made it necessary for the project team to create new codes. The list is attached as Appendix A. In cases where the manufacturer and/or brand had a pre-existing code from the Commission, the team adhered to those guidelines. However, the project team decided to clarify the manufacturer codes in some cases. On the master manufacturer code and brand name list that the project team created, each manufacturer and its brand names are listed. These correspond to the codes listed in the manufacturer and brand columns of the databases' worksheets. The team decided to leave the pre-existing Commission manufacturer codes in place for the Commission databases and the "Corrected/Verified" worksheets. Please note though that the project team did change some of the Commission manufacturer codes for consistency on the "All Models" page. There will be recommendations about how to addresses manufacturer and a coding system at the end of the report. For all other manufacturers, the team tried to select codes that indicated the appropriate company.

1.2 Research Process

The project team at Itron altered the original Initial Plan in order to accelerate the completion of the appliance databases. This resulted in additional synergies as appliances made by the same manufacturer, but in different appliance groups, could be researched simultaneously. This additional efficiency was expected, as the project team proposed rearranging the appliance grouping due dates to create the aforementioned situation.

The project team anticipated that many model numbers would be missing from the Commission databases. However, the volume of unreported model numbers surprised all members of the project team. Consequently, the project was more labor intensive than expected.

Additionally, the project team tried to be as comprehensive and include as many manufacturers as possible. Oftentimes, however, there were additional manufacturers found after the team thought the database was complete. The team tried to update all the appliance databases and include any missing information, but small or specialized manufacturers for any of the 13 appliance groups may have been missed. There were a few instances where a manufacturer was contacted but model numbers were not provided to the project team. These instances have been indicated on the appropriate manufacturer contact sheet. It is also possible that some international manufacturers, particularly those based in Asia, were missed inadvertently. Therefore, the project team does not claim to have all model numbers. The appliance databases created by Itron for the Commission as part of the Survey of Regulated Appliances are as comprehensive as currently possible.

1.3 Overall Observations

There are several key factors *discovered* during the process of achieving the goals of the Survey of Regulated Appliances.

- Internet purchasing has changed the consumer landscape.

- There is a lack of manufacturer awareness of California requirements, leading to significant numbers of unreported model numbers.

- Store brands are difficult to trace.

- The market for used appliances would be virtually impossible to track without additional legislation.

The most important development discovered in the process of the Survey of Regulated Appliances is the role of the Internet in the purchasing choices for all consumers, whether they are residential, commercial, wholesalers, or distributors. The Internet has created a situation where a consumer in California, regardless of whether the manufacturer had any direct sales or distribution channels throughout the state, can purchase even large items. Internet sellers can ship many large commercial items as cargo across the country. This has allowed many companies to reach consumers in states that have regulations of which these manufacturers, as well as wholesalers and/or distributors, are not aware.

This seems to be the case with the many manufacturers not currently submitting their information to the California Energy Commission for inclusion in the appliance databases. Although the project team at Itron was prepared to find many of these manufacturers, the volume of model numbers not submitted to the Commission astonished the team.

Another potential issue that has affected the model numbers included with the appliance databases is that some companies are very difficult to find or contact. This issue has particular importance with the luminaires/torchieres (part of group I). The company name found on the packaging in stores visited by the project team was often difficult to pair with manufacturer information. This complication may be similar to that faced by Sears with regard to the Kenmore brand name. Various manufacturers create appliances specifically for the Kenmore label. Currently, these Kenmore model numbers are reported to the Commission. If Sears conducts the reporting, then perhaps the Commission should consider taking action so that all stores' brand names or labels will follow the same criteria. Therefore, retailers such as Wal-Mart that have manufacturers create brands specifically for them would be responsible for submitting any applicable appliance's model number and information to the Commission.

During site visits, the project team realized that there is a large market for used equipment in several of the 13 appliance groups tracked. In particular, this secondary market has notable levels of sales seen for the appliance groups detailed in Table 1-4.

Table 1-4: Appliance Types With Notable Secondary Market

Group	Group Title
A	Commercial Refrigerators and Freezers
B	Refrigerated Canned and Bottled Beverage Vending Machines
D	Commercial Clothes Washers
E	Food Service Cooking Equipment and Patio Heaters

However, discovering the model numbers of units selling for secondary use is extremely difficult. Therefore, the project team focused solely on new models for inclusion in the databases. If the Commission wanted to obtain information on the model numbers of used equipment sold throughout the state, it would most likely need to require that such information be reported as the inventory of used equipment vendors is constantly changing and all of them would have to report the information desired.

2

Group A – Commercial Refrigerators and Freezers

This section details all work concerning appliance Group A – Commercial Refrigerator and Freezers. The project team has included a detailed background, challenges, and suggestions specific to this category of appliances.

2.1 Background

Originally, the Commission's databases tracked standard reach in commercial refrigerators, freezers, and refrigerator/freezers. However, there were many items under this category not tracked by the Commission. One of the first things the project team at Itron created was a list of the various types of commercial refrigeration/freezer equipment available. The original list (Appendix B) contained many types of equipment previously untracked by the Commission. The project team asked for guidance from the project manager and the decision was made to proceed and include as many of these equipment types as possible. Consequently, appliance Group A became one of the most research-intensive categories of the Survey of Regulated Appliances.

Manufacturer Information

The project team strove to make the manufacturer information as complete and accurate as possible. This group was particularly challenging because many manufacturers of commercial refrigerator and freezers are subsidiaries of another company. Overall, 28 manufacturers and their brand lines are represented in the data collected by the project team. Previously, the Commission had data from 17 commercial refrigerator and freezer manufacturers. Most of the manufacturers included in the team's research were added due to the increase in the categories of commercial refrigeration for this study.

As mentioned in the general comments section, the team experienced some challenges when assigning the manufacturer codes. For this appliance group, the most notable changes apply to the "Allmodels" worksheet. Any manufacturer code for model numbers from the Commission database in this list has been changed to conform to the team's master code list. An example is the units built under the Beverage Air brand name. The Commission's previous listing showed these units with Beverage Air as the manufacturer and the brand. However, Beverage Air is a subsidiary of Carrier Commercial Refrigeration. Therefore, the

team selected the pre-existing Commission code CRP (Carrier Corporation) for the manufacturer column and the pre-existing Commission code BVA (Beverage Air) for the brand column. There are two codes for Carrier in the pre-existing Commission manufacturer code list. The team chose CRP, as it seemed the most appropriate choice.

Database Details

In the case of Group A, the appliance group database consists of several spreadsheets with multiple worksheets. The electronic databases for this appliance group are saved separately. Each one contains a specific appliance type, as follows.

- REF – A unit that solely functions within the temperature range adequate for commercial refrigeration needs.

- FRZ - A unit that solely functions within the temperature range adequate for commercial freezing needs.

- RF - A unit that contains more than one compartment. These separate compartments have the capability to function within the temperature range for either commercial refrigeration or freezing needs.

- RF Dual - A unit that has the ability, in at least one compartment, to be set as the temperature range for either commercial refrigeration or freezing needs.

- RF Heat - A refrigeration unit that is designed to integrate commercial cooking equipment.

Within each spreadsheet, the worksheets are named as follows.

- A_ Ref_Allmodels
- A_ Ref_Corrected
- A_ Ref_Manufact
- A_ FRZ_Allmodels
- A_ FRZ_Corrected
- A_ FRZ_Manufact
- A_ Dual_Allmodels
- A_ Dual_Corrected
- A_ Dual_Manufact
- A_ RF Heat_Allmodels
- A_ RF Heat_Manufact

Please refer to Table 1-3 for details on the data contained within the separate worksheets. The team based the general structure of the database on the pre-existing Commission database for this appliance.

As a crucial part of including all the types of commercial refrigerators and freezers desired by the Commission, the team had to create some new categories. Therefore, some of the worksheet names listed above refer to appliance type codes that existed prior to this study. Again, the codes for all appliances are found in Table 1-3. The "Type" column contains a basic three- or four-letter abbreviation, which indicates the appliance.

For this appliance group, a crucial feature of the database pertains to the equipment list of all commercial refrigeration equipment. For ease of use, the team needed to streamline the original equipment list. This new list is included as Appendix C.

In addition to the standard "Type" column, Group A also contains columns entitled Category, Style, Feature, and Suggested Usage. The first two columns (category and style) contain information that corresponds to the five new category classifications for commercial refrigerators and freezers. The five categories now encompass the following:

- Bar,
- Display Merchandiser,
- Food Service,
- Miscellaneous, and
- Reach-In Refrigerators & Freezers.

Each category contains several "style" designations. For instance, the "Bar" category contains the styles listed below.

- Back Bar Cooler
- Beer Dispenser
- Beer Line Chiller
- Beverage Center
- Beverage Remote System
- Bottle Cooler
- Cocktail Station
- Direct Draw Dispenser
- Horizontal Bottle Cooler
- Keg Cooler
- Mug Froster
- Wine Cooler

Each style has a picture, included in Appendix D, which illustrates the general appearance of this type, category, and style of equipment.

In addition, the information contained within the feature and suggested usage columns gives further information of the particular piece of equipment in question. For instance, in many cases, the feature column indicates that the model is extra wide or compact. The suggested usage column is the recommended use from the manufacturer. Therefore, if a manufacturer recommends that a unit be used for bakery items or deli items, these designations are contained within this column. These units may be used for other purposes. However, the manufacturer usually designs a piece of equipment with an ideal commercial use in mind. This clarification is important because the end user may decide to use the equipment in a capacity other than that which the manufacturer suggests.

Another important detail to understand about the category, style, and feature designations for commercial refrigerators and freezers concerns the overlap between the following categories: Reach-In Units with Glass Doors and Display Merchandisers that are Reach-In Units. These two designations are essentially identical. However, some manufacturers market their unit as a display merchandiser and others market their unit simply as a reach-in with a glass door so that the contents can be easily identified without opening the door. The project team found many situations where the end user of the equipment would interchange these units as virtually all glass door reach-in units can serve as display merchandisers. Therefore, the designation decision hinged on the manufacturers suggested use/marketing. If the manufacturer proposed that the unit be used a display merchandiser, it is listed under the Display Merchandiser category with Reach-In as its style. If the manufacturer suggested that the unit be used primarily as a Reach-In, it is classified as such in the category column with "Glass Door" in the feature column.

2.2 Challenges

The most significant challenge involved with this appliance group centered on the volume of models that needed to be included with the expansion of the category. Additionally, the project manager requested picture representation of the various categories. This requirement, while extremely useful, was extremely time-intensive as the category list needed to be finalized prior to picture selection.

Table 2-1: Summary of Group A Model Numbers Missing from CEC Database

Appliance Type	CEC Database	Missing Models
REF	822	4648
FRZ	516	1684
RF Dual	130	347
RF Heat	n/a	131

2.3 Suggestions

For this particular appliance group, model numbers change on a regular basis, as manufacturers are quick to respond to their consumer preferences. Therefore, the project team suggests that these manufacturers be educated about the legal requirement for filing their model number information. The team also suggests research on an every-other-year basis at the minimum in order to determine if new manufacturers are entering the California market. This is a notable possibility as continued globalization ensures international vendors greater sales opportunities in the United States. Last, the team recommends that the Commission reach out and compare notes with the California Department of Health Services Food Safety branch. It is possible that their staff of inspectors will have or be able to create a list of manufacturers seen in use throughout California.

3

Group B – Refrigerated Canned and Bottled Beverage Vending Machines

This section will detail all work concerning appliance Group B – Refrigerated Canned and Bottled Beverage Vending Machines. The project team has included a detailed background, challenges, and suggestions specific to this appliance category.

3.1 Background

The Commission had a pre-existing database that served as a foundation for team efforts. The project team used site visits, Internet research, and manufacturer calls to determine what models were available for sale to consumers in California. For vending machines, the team found site visits to be particularly useful as the staff had insight into the vending machine market as well as manufacturer cut sheets for the team to reference.

During research, the project team discovered that vending machine manufacturers were expanding their product lines. They had developed many types of refrigerated and frozen vending machines beyond the traditional can and bottle types. Further examination showed that the manufacturers did so in order to increase their market and placement potential.

Consequently, the original title and parameters for this group did not include all refrigerated vending machines available for sale to a consumer in California. The project team sought guidance from the project manager in determining which vending products should be included in this database. The team was instructed to include all refrigerated and frozen vending machines. Therefore, the appliances within this group are not all refrigerated canned and bottled beverage vending machines. Despite this, the group title was not changed.

The database assembled by the project team includes model numbers for several types of vending machines:

- Refrigerated canned,
- Refrigerated bottled,
- Refrigerated beverage mixed (can include cans, bottles, and aseptic cartons),
- Refrigerated milk,

- Refrigerated food/drink mixed,
- Refrigerated food,
- Refrigerated snack, candy, pastry, and
- Frozen food (includes ice cream).

The amount of information available through site visits, Internet research, and manufacturer calls was limited. None of the vending machine manufacturers had the kilowatt-hour electricity usage of their units readily available.

Manufacturer Information

The project team strove to make the manufacturer information as complete and accurate as possible. Of the eight vending machine manufacturers found by the project team, six had not reported some or all of their model numbers to the Commission. However, this may be partially due to the change in criteria for this appliance group.

Database Details

Each appliance group has a spreadsheet containing multiple worksheets. For Group B, the sheets are as follows.

- B_RefrigVend_Allmodels
- B_RefrigVend_corrected
- B_RefrigVend_manufact

Please refer to Table 1-3 for details on the data contained within the separate worksheets. The team based the structure of the database on the pre-existing Commission database for this appliance.

3.2 Challenges

There were no significant challenges with regard to this particular group of appliances.

3.3 Suggestions

The project team recommends that the Commission ask the eight vending machine manufacturers listed in the databases to submit all their model numbers and information. The Commission can then exclude any models that do not meet the criteria for the new, expanded group.

4

Group C – Infrared Gas Space Heaters

This section will detail all work concerning appliance Group C – Infrared Gas Space Heaters. The project team has included a detailed background, challenges, and suggestions specific to this category of appliances.

4.1 Background

This group of appliances had no pre-existing database from the Commission. Therefore, the team began by examining the list of manufacturers assembled for the Initial Plan. There are 10 manufacturers of infrared gas space heaters nationwide. A consumer in California can purchase from any of these manufacturers, either directly or through a distributor and/or retailer.

Most of the information from this appliance group came from manufacturer websites. Consequently, manufacturers may have either recently discontinued or recently added units to their product line. However, the team is confident that the list is generally comprehensive and will serve as an excellent foundation for a new Commission database.

Manufacturer Information

The project team has included as much manufacturer contact information as possible. Please note that all 10 manufacturers' websites are listed on the manufacturer contact sheet for this appliance group. As always, the team strove to make the manufacturer information as complete and accurate as possible.

The team chose to include model information that was generally available by all of the manufacturers. The Commission should determine what information should be required based on the information provided and independent evaluation.

Database Details

Each appliance group has a spreadsheet containing multiple worksheets. For Group C, the sheets are as follows.

- C_InfrGasSpcHtr_Allmodels
- C_InfrGasSpcHtr_Manufact

Please refer to Table 1-3 for details on the data contained within the separate worksheets.

4.2 Challenges

The team encountered no significant challenges with regard to this particular group of appliances.

4.3 Suggestions

The project team recommends that the Commission require the 10 manufacturers of infrared gas space heaters listed in the database to submit all their model numbers and information for inclusion in the official Commission database.

5

Group D – Commercial Clothes Washers

This section will detail all work concerning appliance Group D – Commercial Clothes Washers. The project team has included a detailed background, challenges, and suggestions specific to this category of appliances.

5.1 Background

The Commission had a pre-existing database that served as a foundation for team efforts. The project team used site visits, Internet research, and manufacturer calls to determine models available for sale to consumers in California.

There are eight commercial clothes washer manufacturers nationwide. These manufacturers create 12 brand names. A consumer in California can purchase a commercial clothes washer from any of these manufacturers, either directly or through a distributor and/or retailer. The distributor/wholesaler chain is prominent in California due to the large market for these products, whether coin-operated or simply for commercial use.

The team found the national ENERGY STAR® list helpful, as several of the model numbers listed there could not be located via another method.

Manufacturer Information

The project team strove to make the manufacturer information as complete and accurate as possible. However, the team was unable to locate any manufacturer information for Dexter. The Dexter information came from the ENERGY STAR website. It did not have the manufacturer contact information for Dexter or General Electric's (GE's) Commercial Laundry Division. The team was also unable to determine the address for GE's Commercial Laundry Division through other research methods. However, the team did locate GE's phone number and web address, which are listed in the manufacturer contact information worksheet.

Database Details

Each appliance group has a spreadsheet containing multiple worksheets. For Group D, the sheets are as follows.

- D_CommWashers_Allmodels
- D_CommWashers_Corrected
- D_CommWashers_Manufact

Please refer to Table 1-3 for details on the data contained within the separate worksheets. The team based the structure of the database on the pre-existing CEC database for this appliance.

Unfortunately, for all the model numbers the project team found that were not included in the Commission's pre-existing database, the power consumption, water consumption, energy factor, water factor and remaining moisture percentage information was not available. The team understands the importance of this information; however, it was not discovered through any of the research channels. Obviously, although the manufacturers have this information, it is generally not made available to the public. Along these lines, the Commission should note that the two manufacturers that do submit their model numbers do not make the aforementioned information available either. The project team was only able to locate the power consumption of two models out of 310. Therefore, the corrected worksheet mainly contains conflicting information for compartment capacity in cubic feet discovered by the team.

5.2 Challenges

The team encountered no significant challenges with regard to this particular group of appliances.

5.3 Suggestions

Despite finding that over 60 model numbers had not been reported to the Commission, the project team found this appliance group to have one of the most comprehensive Commission databases. The missing model numbers come from seven manufacturers that are not currently reporting their model numbers to the Commission. It is highly possible that these manufacturers are not aware of the requirement. Therefore, the project team recommends that the Commission initiate contact with all nine manufacturers in order to educate them about the requirement and the specific information needed by the Commission.

6

Group E – Food Service Cooking Equipment and Patio Heaters

This section details all work concerning appliance Group E – Food Service Cooking Equipment and Patio Heaters. The project team has included a detailed background, challenges, and suggestions specific to this category of appliances.

6.1 Background

The project team first clarified the types of food service equipment that the Commission desired to include for the survey. The project manager instructed the team to focus on commercial cooking equipment and hot food holding cabinets. This entailed researching many new types of equipment as the Commission's original database only included commercial convection ovens.

For this study, commercial cooking equipment is defined as follows:

- Commercial Convection Ovens
- Commercial Ranges
- Commercial Range/Oven Combinations
- Hot Food Holding Cabinets, including Proofers

In addition to this food service equipment, the project team researched patio heaters. There was no pre-existing database for this appliance. It is important to note that the team came across several gas patio heater manufacturers while researching infrared gas space heaters.

Manufacturer Information

The project team strove to make the manufacturer information as complete and accurate as possible. However, the team was unable to locate any manufacturer information for APW Wyatt. The team obtained model number information for this manufacturer through distributors and retailers, via site visits, and Internet research. Additionally, as with Group A, some manufacturers in this appliance group are subsidiaries of larger companies. Overall, 16 manufacturers and their brand lines are represented in the data collected by the project

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team. This represents a significant increase from the Commission database that contained information from only one manufacturer.

Database Details

The project team has provided the Commission with two separate spreadsheets for the appliances within Group E. One contains all the food service equipment and the other the patio heater information. The food service spreadsheet contains the following appliance types.

- OVN – A commercial convection oven unit
- RNG - A commercial range unit
- R/O - A commercial range/oven combination unit
- HDC – A commercial hot food holding cabinet
- PRFR - A commercial proofer (a unit that can be usually be used as a hot food holding cabinet, generally has a lower temperature range)

Each spreadsheet has several worksheets for each appliance type within group E. The types are as follows:

- E _ FoodService_OvenOnly_Allmodels
- E _ FoodService_RangeOven_Allmodel
- E _ Food Service_RangeOnly_Allmodel
- E _ Food Service_HotFdHold_Allmodel
- E _ FoodService_Corrected
- E _ FoodService_Manufact
- E_PatioHeaters_Allmodels
- E_PatioHeaters_Manufact

Please refer to Table 1-3 for details on the data contained within the worksheets. The team based the general structure of the database on the pre-existing Commission database for this appliance.

6.2 Challenges

The most significant challenge for this appliance group was the way in which the Internet has impacted the ability of consumers in California to purchase the equipment included in this appliance group. Many distributors and wholesalers in other states will sell commercial cooking equipment to a purchaser in California and ship it as cargo. As far as patio heaters are concerned, many Internet retailers will sell direct to any consumer and ship these units via traditional shipping methods (USPS, UPS, FedEx, etc.) as the gas tanks are not included.

Due to this development, the team needed to include many manufacturers that do not have a physical sales presence in California. The team expects that this trend will continue and grow in the future.

6.3 Suggestions

The project team recommends that the Commission initiate contact with all the manufacturers listed in order to educate them about the requirement and the specific information needed by the Commission. The team believes that most of the manufacturers for this appliance group are not aware of the requirement.

7

Group F – Ballasts Designed for Use with T5 or T8 Fluorescent Lamps

This section details all work concerning appliance Group F – Ballasts Designed for Use with T5 or T8 Fluorescent Lamps. The project team has included a detailed background, challenges, and suggestions specific to this appliance category.

7.1 Background

The Commission had a pre-existing database that served as a foundation for team efforts. The project team used site visits, Internet research, and manufacturer calls to determine what models were available throughout California.

Manufacturer Information

The project team strove to make the manufacturer information as complete and accurate as possible. However, the lack of information available for overseas manufacturers proved to be an issue. The team obtained model number information for this appliance group through manufacturers, distributors, and retailers, mainly through calls and Internet research. The pre-existing Commission database had 16 manufacturers and 384 model numbers represented. The project team added another six manufacturers and found over 2,500 ballasts missing from the previous Commission database.

Database Details

The project team has provided the Commission with a spreadsheet for all ballasts meeting the criteria for Group F. The spreadsheet contains several worksheets:

- F _ BLST_allmodels
- F _ BLST_corrected
- F _ BLST_Manufact

Please refer to Table 1-3 for details on the data contained within the separate worksheets. The team based the general structure of the database on the pre-existing Commission database for this appliance.

7.2 Challenges

Ballasts have increasingly become an imported commodity into the United States. Most likely, this trend will increase with time. Many ballast manufacturers are in Asia. It is extremely difficult to obtain detailed information from many of these companies. This is reflected in the gaps seen in the manufacturer contact sheet. Consequently, the project team believes there are ballasts meeting the criteria for this appliance group that are missing from the database. However, it is not clear what the most appropriate solution to this dilemma may be.

7.3 Suggestions

Since most of the manufacturers listed already report their model numbers to the Commission, the project team believes that there may be a communication issue. There appears to be some confusion between the information the Commission wants and what the manufacturer thinks is required. Obviously, the intention of the reporting manufacturers is to comply, yet they are not reporting their full list of models that meet the criteria. Additional education and increased communication with all the manufacturers listed should alleviate most of these issues.

8

Group G – Heat Pump Water Heaters, Hot Water Dispensers, and Mini-Tank Electric Water Heaters

This section details all work concerning appliance Group G – Heat Pump Water Heaters, Hot Water Dispensers, and Mini-Tank Electric Water Heaters. The project team has included a detailed background, challenges, and suggestions specific to this category of appliances.

8.1 Background

This appliance group was straightforward in comparison to many of the other appliance groups. The three appliance types contained in the group had pre-existing Commission databases. However, there was no Commission database for mini-tank electric water heaters, specifically. The Commission databases were small electric storage and small electric instantaneous. The team created a mini-tank category and compared this to a combination of the two pre-existing databases. It is important to note that for mini-tank electric water heaters, the project team designated all units with a volume of 20 gallons or less as qualifying for the category. Therefore, any units above that volume from the Commission's small electric storage database are excluded (from all worksheets).

Manufacturer Information

The project team strove to make the manufacturer information as complete and accurate as possible. For heat pump water heaters and hot water dispensers, the team was able to secure contact information for all of the manufacturers. However, the team was unable to find manufacturer information for some of the mini-tank units that were located through distributors and/or wholesalers. The team obtained the model number information for all manufacturers through distributors and retailers via site visits, Internet research, and calls.

The increase in manufacturers can be seen in Table 8-1. It illustrates a comparison of the number of manufacturers in the pre-existing CEC database and the total number found by the project team.

Table 8-1: Summary of Group G Manufacturers Missing from CEC Database

Appliance Type	CEC database	Missing Manufacturers
HPWH	2	9
HWD	1	7
MTEWH	12	20

Database Details

The project team has provided the Commission with three separate spreadsheets for the appliances within Group G. One contains all the heat pump water heaters, another hot water dispensers, and the last, mini-tank electric water heaters. The following abbreviations are used for the appliance types.

- PWH – Heat Pump Water Heater
- HWD – Hot Water Dispenser
- MTEWH – Mini-Tank Electric Water Heaters

Each spreadsheet has several worksheets for each appliance type within group G. The types are as follows:

- G _ HPWH_Allmodels
- G _ HPWH_Corrected
- G _ HPWH_Manufact
- G _ HotWaterDisp_Allmodels
- G _ HotWaterDisp_Corrected
- G _ HotWaterDisp_Manufact
- G _ MiniTankWH_Allmodels
- G _ MiniTankWH_Corrected
- G _ MiniTankWH_Manufact

Please refer to Table 1-3 for details on the data contained within the separate worksheets. The team based the general structure of the database on the pre-existing Commission database for this appliance.

8.2 Challenges

There were no significant challenges with regard to this particular group of appliances.

8.3 Suggestions

The project team recommends that the Commission initiate contact with all the manufacturers listed in order to educate them about the requirement and the specific information needed by the Commission. The team believes that most of the manufacturers for this appliance group are not aware of the requirement.

9

Group H – Tub Spout Diverters

This section will detail all work concerning appliance Group H – Tub Spout Diverters. The project team has included a detailed background, challenges, and suggestions specific to this category of appliances.

9.1 Background

The Commission had a pre-existing database that served as a foundation for team efforts. However, the project team found it difficult to locate the information included in the Commission database. Therefore, site visits, Internet research, and manufacturer calls were used to determine what models were available for sale to consumers in California. The team found site visits to be particularly useful as tub spout diverters are mainly sold to consumers in California through distributor, wholesalers, and retailers.

Manufacturer Information

The project team strove to make the manufacturer information as complete and accurate as possible. There are 26 manufacturers listed in the tub spout diverter manufacturer spreadsheet. The project team obtained information from 21 of these manufacturers. The project team was unable to locate data for seven manufacturers in the Commission's database. Additionally, there are discrepancies with regard to manufacturer and brand name codes for this appliance type.

Some of the manufacturers from the Commission database are listed differently than the information found by the project team. Therefore, the Commission database and the "Corrected/Verified" worksheets contain different codes than on the "Allmodels" sheets. This is similar to other appliance groups where the manufacturer and brand codes were streamlined through the research process.

Database Details

The project team has provided the Commission with a spreadsheet with information for tub spout diverter models found available for sale to a consumer in California. The spreadsheet contains several worksheets.

- H_TubSpout_AllModels
- H_TubSpout_Corrected
- H_TubSpout_Manufact

Please refer to Table 1-3 for details on the data contained within the separate worksheets.

9.2 Challenges

The challenge particular to this appliance group is the lack of language consistency across manufacturers. For instance, some manufacturers consider the mechanical piece inside the wall plumbing to be a tub spout diverter and the portion that extends from the wall decorative. Other manufacturers consider both pieces inclusive in their description of a tub spout diverter. Therefore, the project team included both internal and external plumbing components in their model numbers.

The Commission should consider exactly for which piece or pieces that model number information will be required. This clarification will be necessary to ensure that the manufacturer report the same type of information to the Commission.

9.3 Suggestions

As with other appliance groups, most tub spout diverter manufacturers already report their model numbers to the Commission. There is a high likelihood that there may be a communication discrepancy between the two parties. For unknown reasons, manufacturers are not reporting their full list of models (including all subsidiary brand model numbers) that meet the criteria developed by the Commission. Additional education and increased communication with all the manufacturers listed should alleviate most of these issues.

10

Group I – Traffic Signals, Exit Signs, and Luminaires

This section will detail all work concerning appliance Group I – Traffic Signals, Exits Signs, and Luminaires. For the purposes of this study, luminaires will be referred to as torchieres throughout the remainder of this section. The project team has included a detailed background, challenges, and suggestions specific to this category of appliances.

10.1 Background

Traffic signals and exit signs have pre-existing Commission databases. However, torchieres had no Commission database. Therefore, the project team proceeded with torchieres differently than the other two appliances in this group.

For traffic signals, the pre-existing database served as a framework for team efforts. The project team used site visits, Internet research, and manufacturer calls to determine what models were available for sale to consumers in California. The same is true for exit signs. For torchieres, site visits made up more of the research than with the other two appliances. Internet research became the next important step. Last, the team conducted some manufacturer calls. These differences occurred mainly due to the different sales channels used by the manufacturers of these appliance types.

Manufacturer Information

The project team strove to make the manufacturer information as complete and accurate as possible. For traffic signals, the team only found three manufacturers that were not reporting model number data to the Commission. However, it is important to note that the project team attempted to contact a traffic signal manufacturer, McCain Traffic Supplies, on several occasions. The team placed calls and attempted to visit the company's main office in Vista, California, but was unable to receive model number information from this manufacturer. Therefore, the Commission should ensure that this company is made aware of the requirement to provide model numbers and corresponding information to the Commission. Also, considering that only two manufacturers were missing from the Commission's database, and the team found over 275 missing traffic signal model numbers, it is unclear why so many of the model numbers of reporting manufacturers were not reported.

With exit signs, the team encountered an unforeseen circumstance. Only two of the 28 manufacturers found by the project team were reporting model numbers to the Commission. Additionally, due to the nomenclature for the Exitronix models, this appliance had more model numbers than any other single appliance. In fact, the team found 307,016 model numbers missing from the pre-existing Commission database. These model numbers span six Excel spreadsheets and 31 worksheets. Due to the significant quantity of model numbers, the team chose to eliminate the "Allmodels" section for this appliance type. Essentially, "Allmodels" is simply a combination of the Commission database and the missing model numbers, and hence duplicates information. With the extent of data involved for this appliance, the project team believed it would be best to exclude the "Allmodels" for this reason.

For torchieres, the project team located 59 manufacturers with 760 model numbers. This is as comprehensive as was possible for this study. However, there is a notable possibility that some torchiere manufacturers were missed. This is because it was difficult to determine the manufacturers that sell under a wide variety of store brand names. Through research, the team identified some of these manufacturers, but not all. The team will address possible recourse in Subsection 10.5.

Database Details

The project team has provided the Commission with separate spreadsheets for each appliance type within Group I. One contains traffic signals, another torchieres, and, as previously mentioned, exit signs are on six separate Excel spreadsheets. This was necessary to accommodate the volume of model numbers. Electronic versions of the spreadsheets are numbered 0-5.

As with the other appliance groups, each spreadsheet contains several worksheets. They are listed below by appliance type.

- Traffic Signals
  - I_TS_allmodels
  - I_TS_corrected
  - I_TS_manufact

- Exit Signs
  - I_Exit_CEC_db
  - I_Exit_Corrected
  - I_Exit_Missing_0
  - I_Exit_Manufact
  - I_Exit_Alkco

- I_Exit_Beghelli
- I_Exit_BestLighting
- I_Exit_BigBeam
- I_Exit_ChlorideSystems
- I_Exit_Concealite
- I_Exit_Crescent
- I_Exit_DMFLighting
- I_Exit_Dual_Lite
- I_Exit_Highlites
- I_Exit_HyakLighting
- I_Exit_Isolite1
- I_Exit_Isolite2
- I_Exit_Exitronix1
- I_Exit_Exitronix2
- I_Exitronix3
- I_Exitronix4
- I_Exit_LightingSupply
- I_Exit_LightPanel
- I_Exit_Lithonia
- I_Exit_Morlite
- I_Exit_Mule
- I_Exit_Pathway
- I_Exit_Signtex
- I_Exit_Siltron
- I_Exit_Simkar
- I_Exit_Skyline
- I_Exit_SRBTech
- I_Exit_TechConsumer
- I_Exit_USEnergy

- Luminaires/Torchieres
  - I_TCH_AllModels
  - I_TCH_Manuf
  - I_TCH_Stores

Please refer to Table 1-3 for details on the data contained within the separate worksheets. The team based the general structure of the traffic signal and exit signs databases on the pre-existing Commission databases for these appliances.

The traffic signal database follows the same basic structure as the other databases in this study. However, the naming criterion for the exit signs is different due to the volume of models. Therefore, the team decided that the easiest solution was to create separate worksheets for the 26 manufacturers not reporting models to the Commission. In turn, most of the worksheets for this appliance contain a single manufacturer's model numbers and information. However, Isolite and Exitronix have too many models to be contained within a single worksheet. (Microsoft built these limitations into Excel.) For the two manufacturers reporting to the Commission, the project team listed the models found and not included in the Commission database in the "Missing" worksheet. Again, due to the extremely large volume of model numbers for this appliance, the project team did not create any "Allmodels" worksheets as they are a combination of the Commission database and the "Missing" model numbers.

As with other appliances without previous data from the Commission, the torchiere data contain worksheets for "Allmodels" and manufacturer contact information. The project team also included a spreadsheet containing several online retailers of torchieres. These resources were valuable to the team's research and have thus been provided to the Commission.

10.2 Challenges

There were no specific challenges with regard to traffic signals. In fact, traffic signals were the most straightforward appliance of this group. Exit signs, however, proved to be an unexpected challenge.

The volume of exit sign models numbers took the entire project team by surprise. The team did not expect to encounter over 300,000 models that required data entry. This was an extremely time- and resource-intensive process. As mentioned, the nomenclature for Exitronix allows for almost 200,000 possible combinations for their exit sign product line. Every option affects the model number of the units. Therefore, all model combinations had to be included for the database to be as thorough as possible. This process required significantly more time to complete than anticipated.

Torchieres proved to have their own unique tribulations. This appliance is mainly sold to end users through a wide variety of retail channels. This type of lighting product can be found in stores ranging from Wal-Mart to expensive lighting boutiques. Consumers can also purchase torchieres from many sources on the Internet. However, the large numbers of retail choices

and price-points for purchase lead the project team to suspect that most torchieres sales occur directly from a storefront in California.

The nature of retail lighting has led to the creation of many store brands of torchieres. However, the project team found it difficult to determine the actual manufacturer of the models in question. In addition, the retailers often change the manufacturer's model number. This makes tracing the manufacturer difficult and led the project team to suspect that there may be additional manufacturers not included in the database created for this study.

10.3 Suggestions

This group contains three types of appliances, each of which requires a different approach. For instance, traffic signal manufacturers may not understand what information the Commission requires. Increased communication with these manufacturers should alleviate most of the problems. The Commission will also need to enforce some action in order to obtain the model number information from all manufacturers found by the project team.

The project team recommends that the Commission develop a strategy to deal with the large volume of exit sign model numbers. Action could include a specific staff member assigned to monitor and independently research exit signs to ensure that manufacturers are reporting all model numbers. The Commission could also choose to outsource this responsibility. It would be easy to lose track of many model numbers for this appliance without some entity working to update the database on a continual basis.

The Commission may want to consider having the retailers take on some responsibility for reporting their torchiere models and manufacturers for inclusion in the database. The team realizes that some large retailers are better suited to this type of requirement than smaller stores. Retailers such as Lowe's, The Home Depot, Wal-Mart, Kmart, and Target all have brands of torchiere particular to their chain. The project team found it difficult, and in some cases impossible, to determine the actual manufacturer of these units. The team recommends that large retailers be required to submit their torchiere manufacturer and model number data for at least one year. After that point, the Commission will have manufacturer information and should be able to receive subsequent model number data from those parties directly.

11

Group J – Transformers

This section will detail all work concerning appliance Group J – Transformers. The project team has included a detailed background, challenges, and suggestions specific to this category of appliances.

11.1 Background

The Commission had a pre-existing database that served as the foundation for team efforts. The project team used Internet research and manufacturer calls to determine what models were available throughout California.

The project team clarified with the Commission the exact specifications for the transformers to be included in this group. With more detailed information, the team primarily conducted Internet research in order to develop the database.

Manufacturer Information

The project team strove to make the manufacturer information as complete and accurate as possible. The pre-existing Commission database had nine manufacturers and 6,220 model numbers represented. The project team added another six manufacturers and found 2,145 transformers missing from the previous CEC database.

The team found some contact information for all transformer manufacturers. However, neither General Electric (GE) nor Hammond Power Solutions had a phone number openly available. Since GE already reports their models to the Commission, the team believes that the Commission has contact information for them. Hammond Power Solutions is located in Compton, California. The Commission may have the authority to obtain contact information from the Los Angeles Department of Water and Power for this manufacturer.

Database Details

The project team has provided the Commission with a spreadsheet for all ballasts meeting the criteria for Group J. The spreadsheet contains several worksheets.

- J_Transformers_AllModels
- J_Transformers_Corrected
- J_Transformers_Manufact

Please refer to Table 1-3 for details on the data contained within the separate worksheets. The team based the general structure of the database on the pre-existing Commission database for this appliance.

11.2 Challenges

Once the team clarified the specific features of the transformers that the Commission wanted included in the database, this appliance group posed no specific challenges.

11.3 Suggestions

Since most of the manufacturers listed already report their model numbers to the Commission, the project team believes that there may be a communication issue. These manufacturers all have models that were not included in the Commission database, so there appears to be some confusion between the information that the Commission requires needs and what the manufacturers believe is required. Obviously, the intention of the reporting manufacturers is to comply, yet they are not reporting their full list of models that meet the criteria. Additional education and increased communication with all the manufacturers listed should alleviate most of these issues.

12

Group K – Spot Air Conditioners, Ground Source Heat Pumps, Ground Water Source Heat Pumps, Gas Air Conditioners, and Computer Room Air Conditioners

This section will detail all work concerning appliance Group K – Spot Air Conditioners, Ground Source Heat Pumps, Ground Water Source Heat Pumps, Gas Air Conditioners, and Computer Room Air Conditioners. The project team has included a detailed background, challenges, and suggestions specific to this category of appliances.

12.1 Background

All of the appliances mentioned above have pre-existing Commission databases except gas air conditioners. The project team was unable to find any air conditioners powered by gas for the purposes of this study. Therefore, for all four remaining appliance types within this group, the team used the pre-existing database as a framework for data collection. The project team used site visits, Internet research, and manufacturer calls to determine what models were available for sale to consumers in California.

Manufacturer Information

The project team strove to make the manufacturer information as complete and accurate as possible for each appliance type. The manufacturers for these appliance groups are generally known to the Commission.

Table 12-1: Level of Manufacturer Participation for Group K

Appliance Type	Commission Manufacturers	Manufacturer Not Reporting Any Models to the Commission
Computer Room Air Conditioning	12	2
Ground Source Heat Pumps	10	2
Ground Water Source Heat Pumps	4	8
Spot Air Conditioning	6	19

However, the project team still found significant quantities of model numbers not reported to the Commission.

Table 12-2: Unreported Model Numbers

Appliance Type	Number of Models in Commission Database	Number of Models Missing From Commission Database
Computer Room Air Conditioning	426	2900
Ground Source Heat Pumps	1285	771
Ground Water Source Heat Pumps	642	776
Spot Air Conditioning	22	249

Please note that for computer room air conditioning, some of the missing model numbers may be accounted for due to the Commission's use of asterisks in the model numbers to indicate changing values. This nomenclature from the Commission may also account for a small amount of missing model numbers in the ground source heat pump and ground water source heat pump categories.

Additionally, there are discrepancies with regard to manufacturer and brand name codes for this appliance type. Some of the manufacturers from the Commission database are listed differently than the information found by the project team. Therefore, the Commission database and the "Corrected/Verified" worksheets contain different codes than on the "Allmodels" sheets. This is similar to other appliance groups where the manufacturer and brand codes were streamlined through the research process.

Database Details

The project team provided the Commission with separate spreadsheets for each appliance type within Group K. As with the other appliance groups, each spreadsheet contains several worksheets. They are listed below by appliance type.

- Computer Room Air Conditioning
    - K_CompRoomAC_Allmodels
    - K_CompRoomAC_Corrected
    - K_CompRoomAC_Manufact

- Ground Source Heat Pumps
    - K_GrdSrcHP_Allmodels
    - K_GrdSrcHP_Corrected
    - K_GrdSrcHP_Manufact

- Ground Water Source Heat Pumps
  - K_GrdWtrSrcHP_Allmodels
  - K_GrdWtrSrcHP_Corrected
  - K_GrdWtrSrcHP_Manufact

- Spot Air Conditioning
  - K_SpotAC_Allmodels
  - K_SpotAC_Corrected
  - K_SpotAC_Manufact

Please refer to Table 1-3 for details on the data contained within the separate worksheets.

12.2 Challenges

There were no significant challenges with regard to this particular group of appliances.

12.3 Suggestions

Most of the manufacturers for the appliances in Group K already report their model numbers to the Commission. There is a high likelihood that there may be a communication discrepancy between the two parties. For unknown reasons, manufacturers are not reporting their full list of models (including all subsidiary brand model numbers) that meet the criteria developed by the Commission. Additional education and increased communication with all the manufacturers listed should alleviate most of these issues.

13

Group L – Non-Packaged Boilers

This section will detail all work concerning appliance Group L – Non-Packaged Boilers. The project team has included a detailed background, challenges, and suggestions specific to this category of appliances.

13.1 Background

This group of appliances had no pre-existing database from the Commission. Therefore, the team began by examining the list of manufacturers assembled for the Initial Plan. There are 13 manufacturers of non-packaged boilers nationwide. A consumer in California can purchase from any of these manufacturers, either directly or through a distributor/wholesaler.

Most of the information from this appliance group came from manufacturer websites. Consequently, manufacturers may have either recently discontinued or recently added units to their product line. However, the team is confident that the list is generally comprehensive and will serve as an excellent foundation for a new Commission database.

Manufacturer Information

Since there is no pre-existing database for this particular appliance group, the project team included as much manufacturer contact information as possible. Please note that all 13 manufacturers' websites are listed on the manufacturer contact sheet for this appliance group. As always, the team strove to make the manufacturer information as complete and accurate as possible.

The team chose to include model information that was generally available from all of the manufacturers. The Commission should determine what information should be required based on the information provided and independent evaluation.

Database Details

Each appliance group has a spreadsheet containing multiple worksheets. For Group L, the sheets are as follows.

- L_Nonpkg_Boilers_All
- L_Nonpkg_Boilers_Manufact

Please refer to Table 1-3 for details on the data contained within the separate worksheets.

13.2 Challenges

The only challenge the project team encountered was ensuring that the models included were non-packaged boilers. Therefore, the Commission should make the requirement for the manufacturers extremely specific in order to exclude boilers that do not meet the Commission's criteria.

13.3 Suggestions

Several manufacturers listed for non-packaged boilers also produce other appliances included in the Survey of Regulated Appliances. The project team recommends that the Commission require the 13 manufacturers of non-packaged boilers to submit all of their model numbers and information for inclusion in the official Commission database.

14

Group M – Small Gas Furnaces Designed for Use with a Three-Phase Electrical Supply

This section will detail all work concerning appliance Group M – Small Gas Furnaces Designed for Use with a Three-Phase Electrical Supply. The project team has included a detailed background, challenges, and suggestions specific to this category of appliances.

14.1 Background

The Commission had a pre-existing database that served as a foundation for team efforts. However, the project team found it difficult to locate the information included in the Commission database. The team was unable to verify or correct any of the model numbers in the Commission database. For the model numbers found through the team's research, Internet research and manufacturer calls were the two main methods used to determine what models were available for sale to consumers in California.

Manufacturer Information

The project team strove to make the manufacturer information as complete and accurate as possible. There are 12 manufacturers listed in the small gas furnace manufacturer spreadsheet. Eleven already report model numbers to the Commission. However, the project team found almost 900 unreported model numbers. The project team obtained addresses and phone numbers for 10 of the 12 manufacturers. All 12 have website addresses included in the manufacturer worksheet. Additionally, there are discrepancies regarding manufacturer and brand name codes for this appliance type.

Some of the manufacturers from the Commission database are listed differently than the information found by the project team. Therefore, the Commission database and the "Corrected/Verified" worksheet contain different codes than the "Allmodels" sheet. This is similar to other appliance groups where the manufacturer and brand codes were streamlined through the research process.

Database Details

Each appliance group has a spreadsheet containing multiple worksheets. For Group M, the sheets are as follows.

- M_SmlGasFurnace_Allmodels
- M_SmlGasFurnace_Corrected
- M_SmlGasFurnace_Manufact

Please refer to Table 1-3 for details on the data contained within the separate worksheets.

14.2 Challenges

The only challenge the project team encountered was ensuring that the models included met the specifications for this type of small gas furnace. Therefore, the Commission should make the requirement for the manufacturers extremely specific in order to exclude small gas furnaces that do not meet the Commission's criteria.

14.3 Suggestions

Several of the manufacturers listed for these small gas furnaces also produce other appliances included in the Survey of Regulated Appliances. The project team recommends that the 12 manufacturers of small gas furnaces designed for use with a three-phase electrical supply be required to submit all of their model numbers and information for inclusion in the official Commission database.

15

Summary

This report has contained sections that explained database construction, overall observations of the process, and detailed group-by-group narratives. In the appendices, the team has included the databases for the 13 appliance groups included in the Survey of Regulated Appliances. These databases hold the information that completes all of the goals for this project. The goals of this project are as follows:

- To establish the current models numbers listed in the Commission database,
- To ascertain the accuracy of the information for the aforementioned models,
- To determine the model numbers available for sale in California, and
- To conclude which models are missing from the Commission database.

In addition to the databases delivered to Commission as part of this report, the project team also supplied the following information that was outside the scope of work.

- Manufacturer contact information for all 29 appliance types within the 13 groups,
- A current list of categories of commercial refrigerators and freezers, and
- Pictures matching that list, which will assist the Commission in understanding the different appliance types and their purposes.

The project team was unable to verify most of the model numbers currently reported in the Commission databases through the research methods employed for this project. These methods include the following:

- Internet research,
- Site visits, and
- Manufacturer calls.

The specific reasons for the team's inability to verify the model numbers in the Commission databases are unknown. Each appliance group's text section contains suggestions for improving that particular database's accuracy. Overall recommendations are provided at the end of this section.

To illustrate the quantity of work conducted on behalf of this project, Table 15-1 shows the model number quantities by appliance type.

Table 15-1: Model Number Quantities by Database and Appliance Type

Group	Type Code	Qty of Model Numbers in CEC Database	Qty of All Model Numbers in Database
A	REF	823	5131
A	FRZ	515	2276
A	RF Dual	131	466
A	RF Heat	n/a	129
B	VND	66	95
C	IGSH	n/a	601
D	CMW	182	265
E	R/O	n/a	468
E	OVN	8	373
E	RNG	n/a	98
E	HDC	n/a	296
E	PRFR	n/a	26
E	PH	n/a	82
F	BLST	384	2967
G	HPWH	7	94
G	HWD	8	32
G	MWH	153	276
H	TSD	934	2453
I	TS	86	364
I	EX	46	Not created –see section
I	TCH	n/a	760
J	TRS	6220	8353
K	SpotAC	21	249
K	GSHP	1284	2055
K	GWSHP	641	1417
K	GasAC	None Found	None Found
K	CompAC	426	3325
L	NPB	n/a	590
M	GSF	3582	4452

"n/a" = not applicable as these appliance types did not have prior Commission databases.

Overall, the project team had 14,583 model numbers from previous Commission databases. Through research, almost 325,000 model numbers were found to be missing from those databases. Of those, approximately 307,000 were exit signs. In addition, 3,050 were model numbers from the eight appliance types previously untracked by the Commission. For the remaining 19 appliance types, 14,950 model numbers had not been reported to the Commission for inclusion in the State of California's appliance databases.

Due to the large and unexpected volume of unreported model numbers, the project team made some suggestions to the Commission that may ease the process for future appliance database updates. The project team believes that communication between the manufacturers and the Commission may be inadequate to ensure the accuracy and completeness of the

appliance databases. Manufacturers tend to understand the terminology from within their respective industry. Often, the Commission's language stems from its regulatory nature as well as its interest in energy efficiency. Therefore, developing a clear, language-neutral description of the appliances for which the Commission requires submission of model numbers and corresponding information would be extremely helpful.

Additionally, the constantly updating nature of the databases makes it difficult for users as well as project teams to revise the information. For this study, the project team needed 12 months to complete the updates for 13 appliance groups. Granted, the Commission has more appliance groups than those included in the Survey of Regulated Appliances, however, it seems that one main annual update of the databases would be the most efficient method of maintaining the appliance databases. Additionally, special updates could occur on a quarterly basis for newly introduced appliance model numbers submitted to the Commission. Obviously, the Commission could choose to conduct these updates internally or by outsourcing the work. Along these lines, the Commission should also consider instituting submission deadlines for the manufacturers, so that all model number information from all manufacturers would be received by a specific date in order to update the appliance databases.

Last, due to the potential for new manufacturers to enter the California market, the project team suggests that the Commission has the appliance databases checked regularly for accuracy. The project team believes that work similar to the efforts for this study should become a regular occurrence. The team's research uncovered many manufacturers that were previously unknown to the Commission. The need for additional research will decrease if the Commission institutes the mandatory model number submission with a date guideline for all manufacturers included with the appliance databases. However, it is still crucial to independently verify the information that is submitted.

The databases will be more useful to all interested parties if the Commission has the appliance databases updated and checked on a regular basis. The results of the Survey of Regulated Appliances have made it clear that without future efforts, the appliance databases will return to their inaccurate and incomplete state.

In summary, the project team suggests work continue on an ongoing basis in order to ensure the usefulness of the appliance databases. The team has fulfilled the goals of the study by creating and submitting databases for the 13 appliance groups. The project team also created and submitted work outside of the original scope of work. The project team is confident the databases are as complete and accurate as currently possible. The team hopes the Commission finds all the information included both enlightening and easy to use.

Appendix A

Manufacturer and Brand Name Codes

Master Manufacturer Code List

Appliance Group Designation	Appliance Type	Manufacturer	Manufacturer Code	Brand	Brand Code
A	FRZ	AGA FOODSERVICE GROUP	AGA	VICTORY REFRIGERATION INC.	VRI
A	FRZ	ARCTICA SHOWCASE COMPANY	ARCA	same as manufacturer	
A	FRZ	BROICH ENTERPRISES	BR	ARCTIC AIR	AAI
A	FRZ	CARRIER COMMERCIAL REFRIGERATION	CRP	BEVERAGE-AIR	BVA
A	FRZ	CARRIER COMMERCIAL REFRIGERATION	CRP	CARTER-HOFFMAN	CTH
A	FRZ	CARRIER COMMERCIAL REFRIGERATION	CRP	TYLER REFRIGERATION	TYR
A	FRZ	DI FOODSERVICE	DIF	RANDELL MFG INC	RAN
A	FRZ	ENODIS	ENO	DELFIELD	DFD
A	FRZ	FRANKE CONTRACT GROUP	FCG	FRANKE FOODSERVICE SYSTEMS	FFS
A	FRZ	GLASTENDER INC.	GTR	same as manufacturer	
A	FRZ	HOBART CORPORATION	HBC	HOBART	HOB
A	FRZ	HOBART CORPORATION	HBC	TRAULSEN	TLS
A	FRZ	INGERSOLL RAND	IRD	HUSSMAN CORPORATION	HUS
A	FRZ	LEER LIMITED PARTNERSHIP	LLP	LEER	LER
A	FRZ	LEER LIMITED PARTNERSHIP	LLP	STAR	LST
A	FRZ	LEER LIMITED PARTNERSHIP	LLP	STARRETT	LSTR
A	FRZ	MANITOWOC EQUIPMENT WORKS	MEW	KOOLAIRE	KLA
A	FRZ	MANITOWOC EQUIPMENT WORKS	MEW	MCCALL REFRIGERATION	MRF
A	FRZ	NATIONAL REFRIGERATION AND AIR CONDITIONING INC>	NTR	CONTINENTAL REFRIGERATOR	CTR
A	FRZ	NORLAKE	NLK	same as manufacturer	
A	FRZ	NORTHLAND REFRIGERATION	NLR	NORTHLAND KITCHEN APPLIANCE	NKA
A	FRZ	STANDEX	STX	MASTER-BILT	MAB
A	FRZ	STEVENS-LEE COMPANY	STV	SILVERKING	SLK
A	FRZ	SUB-ZERO	SZ	same as manufacturer	
A	FRZ	TOTAL LOGISTICS, INC.	TTL	ZERO ZONE, INC.	ZEZ
A	FRZ	TRUE MANUFACTURING COMPANY	TMCO	TRUE FOODSERVICE EQUIPMENT, INC.	TFS
A	FRZ	TURBO AIR	TBA	GREEN WORLD	GNW
A	FRZ	TURBO AIR	TBA	same as manufacturer	
A	FRZ	VIKING RANGE CORPORATION	VRC	same as manufacturer	
A	REF	AGA FOODSERVICE GROUP	AGA	VICTORY REFRIGERATION INC.	VRI
A	REF	ALTO SHAAM	ATSH	same as manufacturer	
A	REF	ARCTICA SHOWCASE COMPANY	ARCA	same as manufacturer	
A	REF	BROICH ENTERPRISES	BR	ARCTIC AIR	AAI
A	REF	CARRIER COMMERCIAL REFRIGERATION	CRP	BEVERAGE-AIR	BVA
A	REF	CARRIER COMMERCIAL REFRIGERATION	CRP	CARTER-HOFFMAN	CTH
A	REF	CARRIER COMMERCIAL REFRIGERATION	CRP	TYLER REFRIGERATION	TYR
A	REF	CARRIER COMMERCIAL REFRIGERATION	CRP	same as manufacturer	

Master Manufacturer Code List

Appliance Group Designation	Appliance Type	Manufacturer	Manufacturer Code	Brand	Brand Code
A	REF	DI FOODSERVICE	DIF	RANDELL MFG INC	RAN
A	REF	DI FOODSERVICE	DIF	same as manufacturer	
A	REF	ENODIS	ENO	DELFIELD	DFD
A	REF	FRANKE CONTRACT GROUP	FCG	FRANKE FOODSERVICE SYSTEMS	FFS
A	REF	GLASTENDER INC.	GTR	same as manufacturer	
A	REF	HOBART CORPORATION	HBC	HOBART	HOB
A	REF	HOBART CORPORATION	HBC	TRAULSEN	TLS
A	REF	INGERSOLL RAND	IRD	HUSSMAN CORPORATION	HUS
A	REF	INGERSOLL RAND	IRD	same as manufacturer	
A	REF	MANITOWOC EQUIPMENT WORKS	MEW	HARFORD	HFD
A	REF	MANITOWOC EQUIPMENT WORKS	MEW	KOLPAK	KPK
A	REF	MANITOWOC EQUIPMENT WORKS	MEW	MCCALL REFRIGERATION	MRF
A	REF	MANITOWOC EQUIPMENT WORKS	MEW	MANITOWOC FOODSERVICE GROUP	MTW
A	REF	NATIONAL REFRIGERATION AND AIR CONDITIONING INC>	NTR	CONTINENTAL REFRIGERATOR	CTR
A	REF	NORLAKE	NLK	same as manufacturer	
A	REF	NORTHLAND REFRIGERATION	NLR	NORTHLAND KITCHEN APPLIANCE	NKA
A	REF	STANDEX	STX	FEDERAL INDUSTRIES	FDI
A	REF	STANDEX	STX	MASTER-BILT	MAB
A	REF	STANDEX	STX	same as manufacturer	
A	REF	STEVENS-LEE COMPANY	STV	SILVERKING	SLK
A	REF	SUB-ZERO	SZ	same as manufacturer	
A	REF	TOTAL LOGISTICS, INC.	TTL	ZERO ZONE, INC.	ZEZ
A	REF	TRUE MANUFACTURING COMPANY	TMCO	TRUE FOODSERVICE EQUIPMENT, INC.	TFS
A	REF	TURBO AIR	TBA	GREEN WORLD	GNW
A	REF	TURBO AIR	TBA	same as manufacturer	
A	REF	VIKING RANGE CORPORATION	VRC	same as manufacturer	
A	REF	WOLF (affiliated with Sub-Zero)	WFA	same as manufacturer	
A	RF Dual	AGA FOODSERVICE GROUP	AGA	VICTORY REFRIGERATION INC.	VRI
A	RF Dual	CARRIER COMMERCIAL REFRIGERATION	CRP	BEVERAGE-AIR	BVA
A	RF Dual	DI FOODSERVICE	DIF	RANDELL MFG INC	RAN
A	RF Dual	ENODIS	ENO	DELFIELD	DFD
A	RF Dual	HOBART CORPORATION	HBC	TRAULSEN	TLS
A	RF Dual	INGERSOLL RAND	IRD	HUSSMAN CORPORATION	HUS
A	RF Dual	MANITOWOC EQUIPMENT WORKS	MEW	KOOLAIRE	KLA
A	RF Dual	MANITOWOC EQUIPMENT WORKS	MEW	MCCALL REFRIGERATION	MRF
A	RF Dual	NATIONAL REFRIGERATION AND AIR CONDITIONING INC.	NTR	CONTINENTAL REFRIGERATOR	CTR
A	RF Dual	NORLAKE	NLK	same as manufacturer	

Master Manufacturer Code List

Appliance Group Designation	Appliance Type	Manufacturer	Manufacturer Code	Brand	Brand Code
A	RF Dual	NORTHLAND REFRIGERATION	NLR	NORTHLAND KITCHEN APPLIANCE	NKA
A	RF Dual	STANDEX	STX	MASTER-BILT	MAB
A	RF Dual	STEVENS-LEE COMPANY	STV	SILVERKING	SLK
A	RF Dual	TRUE MANUFACTURING COMPANY	TMCO	TRUE FOODSERVICE EQUIPMENT, INC.	TFS
A	RF Dual	VIKING RANGE CORPORATION	VRC	same as manufacturer	
A	RF Heat	ARCTICA SHOWCASE COMPANY	ARCA	same as manufacturer	
A	RF Heat	DI FOODSERVICE	DIF	same as manufacturer	
A	RF Heat	ENODIS	ENO	DELFIELD	DFD
A	RF Heat	GARLAND COMMERCIAL INDUSTRIES	GLD	US RANGE	USRG
A	RF Heat	HOBART CORPORATION	HBC	TRAULSEN	TLS
A	RF Heat	ILLINOIS TOOL WORKS FOOD EQUIPMENT GROUP	ITW	VULCAN-HART	VUH
A	RF Heat	WOLF RANGE COMPANY	WRC	same as manufacturer	
B	VND	ARROW VENDING	ARW	same as manufacturer	
B	VND	AUTOMATED MERCHANDISING SYSTEMS	AMD	same as manufacturer	
B	VND	AUTOMATIC PRODUCTS INTERNATIONAL, LTD	API	same as manufacturer	
B	VND	CRANE MERCHANDISING SYSTEMS	CMG	same as manufacturer	
B	VND	DIXIE-NARCO, INC.	DXI	same as manufacturer	DXN
B	VND	ROYAL VENDORS	ROV	same as manufacturer	
B	VND	U-SELECT-IT	USI	same as manufacturer	USI
B	VND	VENDO COMPANY	VDO	same as manufacturer	VDO
C	IGSH	DETROIT RADIANT PRODUCTS COMPANY	DTR	RE-VERBER-RAY	RVR
C	IGSH	ENERCO TECHNICAL PRODUCTS	ERC	MR. HEATER	MRH
C	IGSH	GAS FIRED PRODUCTS INC	GFP	SPACE-RAY	SPRY
C	IGSH	ROBERTS-GORDON INC.	RBG	same as manufacturer	
C	IGSH	SOLARFLO	SLFL	same as manufacturer	
C	IGSH	SOLARONICS	SLRN	SUN TUBE	SNTB
C	IGSH	SOLARONICS	SLRN	same as manufacturer	
C	IGSH	SUPERIOR RADIANT PRODUCTS (in Canada)	SRPD	same as manufacturer	
C	IGSH	TRICORP	TRC	FOSTORIA INDUSTRIES	FST
D	CMW	ALLIANCE	ALL	SPEEDQUEEN	SPQ
D	CMW	ALLIANCE	ALL	UNIMAC	UNM
D	CMW	CONTINENTAL	CON	same as manufacturer	CON
D	CMW	DEXTER	DEX	same as manufacturer	DEX
D	CMW	GENERAL ELECTRIC	GE	same as manufacturer	
D	CMW	MAYTAG	MAY	same as manufacturer	MAY
D	CMW	STABER	STB	same as manufacturer	STB
D	CMW	WASCOMAT	WSC	same as manufacturer	WSC

Master Manufacturer Code List

Appliance Group Designation	Appliance Type	Manufacturer	Manufacturer Code	Brand	Brand Code
D	CMW	WHIRLPOOL	WH	same as manufacturer	WH
E	HDC	ALTO SHAAM	ATSH	HALO HEAT	HH
E	HDC	APW WYATT	APW	same as manufacturer	
E	HDC	CARRIER COMMERCIAL REFRIGERATION	CRP	CARTER-HOFFMAN	CTH
E	HDC	CARRIER COMMERCIAL REFRIGERATION	CRP	same as manufacturer	
E	HDC	CRES COR	CMP	same as manufacturer	
E	HDC	HENNY PENNY CORPORATION	HPC	HENNY PENNY GLOBAL FOODSERVICE SOLUTIONS	HPG
E	HDC	HOBART CORPORATION	HBC	HOBART	HOB
E	HDC	HOT FOOD BOXES	HFB	same as manufacturer	
E	HDC	ILLINOIS TOOL WORKS FOOD EQUIPMENT GROUP	ITW	VULCAN-HART	VUH
E	OVN	ALTO SHAAM	ATSH	COMBITHERM	CBT
E	OVN	ALTO SHAAM	ATSH	HALO HEAT	HH
E	OVN	FISHER & PAYKEL	FP	DYNAMIC COOKING SYSTEMS	DCS
E	OVN	FISHER & PAYKEL	FP	same as manufacturer	
E	OVN	GARLAND COMMERCIAL INDUSTRIES	GLD	SUNFIRE	SUNF
E	OVN	GARLAND COMMERCIAL INDUSTRIES	GLD	US RANGE	USRG
E	OVN	HOBART CORPORATION	HBC	HOBART	HOB
E	OVN	IMPERIAL COMMERCIAL COOKING EQUIPMENT	IM	IMPERIAL RANGE	IMR
E	OVN	LANG MANUFACTURING COMPANY	LNG	same as manufacturer	
E	OVN	MIDDLEBY CORPORATION	MDB	SOUTHBEND	SBD
E	OVN	MIDDLEBY CORPORATION	MDB	TOASTMASTER	TSM
E	OVN	MIDDLEBY CORPORATION	MDB	same as manufacturer	
E	OVN	VIKING RANGE CORPORATION	VRC	same as manufacturer	
E	OVN	WOLF RANGE COMPANY	WRC	same as manufacturer	
E	PH	ARCTIC PRODUCTS	ARCP	ARCTIC HEATER	ARCH
E	PH	ARCTIC PRODUCTS	ARCP	LIL SUN	LSUN
E	PH	BLUE RHINO/UNIFLAME	BRF	ENDLESS SUMMER	ENDS
E	PH	BOOMY COMPANY	BOO	BIG FLAME	BGF
E	PH	COLEMAN	CM	BACKHOME	BCKH
E	PH	DAYVA	DYV	same as manufacturer	
E	PH	DYNAMIC COOKING SYSTEMS	DCS	PHOENIX	PHIX
E	PH	EMPIRE COMFORT SYSTEMS	EPS	SUPERB	SBP
E	PH	INFRARED DYNAMICS	INFD	SUN GLO	SGLO
E	PH	SCHEU MANUFACTURING COMPANY	SCHU	ALL PRO	ALLP
E	PH	STRATAGISTICS/ZUBRI OUTDOOR HEATERS	STRG	ZUBRI	ZUB
E	PH	TEECO PRODUCTS	TEE	HOMESTEAD	HMST
E	PH	WHALEN	WHLN	FIREPOLE	FRP

Master Manufacturer Code List

Appliance Group Designation	Appliance Type	Manufacturer	Manufacturer Code	Brand	Brand Code
E	PRFR	FOOD WARMING EQUIPMENT INC.	FEW	same as manufacturer	
E	PRFR	LANG MANUFACTURING COMPANY	LNG	same as manufacturer	
E	R/O	FISHER & PAYKEL	FP	DYNAMIC COOKING SYSTEMS	DCS
E	R/O	GARLAND COMMERCIAL INDUSTRIES	GLD	SUNFIRE	SUNF
E	R/O	GARLAND COMMERCIAL INDUSTRIES	GLD	US RANGE	USRG
E	R/O	HOBART CORPORATION	HBC	HOBART	HOB
E	R/O	ILLINOIS TOOL WORKS FOOD EQUIPMENT GROUP	ITW	VULCAN-HART	VUH
E	R/O	IMPERIAL COMMERCIAL COOKING EQUIPMENT	IM	IMPERIAL RANGE	IMR
E	RNG	FISHER & PAYKEL	FP	DYNAMIC COOKING SYSTEMS	DCS
E	RNG	HOBART CORPORATION	HBC	HOBART	HOB
E	RNG	ILLINOIS TOOL WORKS FOOD EQUIPMENT GROUP	ITW	VULCAN-HART	VUH
E	RNG	IMPERIAL COMMERCIAL COOKING EQUIPMENT	IM	IMPERIAL RANGE	IMR
E	RNG	WOLF RANGE COMPANY	WRC	same as manufacturer	
F	BLST	AAA ELECTRONIC BALLAST CO	AAA	same as manufacturer	
F	BLST	ADVANCE TRANSFORMER	ADV	HANDYMAN	
F	BLST	ADVANCE TRANSFORMER	ADV	MASTER ELECTRICIAN	
F	BLST	ADVANCE TRANSFORMER	ADV	same as manufacturer	
F	BLST	AROMAT CORP.	ARM	NAIS	NAI
F	BLST	ELTEK JUN KWANG COMPANY	EJK	ELIGHT	ELT
F	BLST	FULHAM COMPANY INC.	FHM	same as manufacturer	
F	BLST	GENERAL ELECTRIC	GE	same as manufacturer	
F	BLST	HANJU ENGINEERING	HNJ	SPLENDOR	SPN
F	BLST	HOWARD INDUSTRIES, INC.	HII	HOWARD INDUSTRIES	HWI
F	BLST	INDUSTRIAS SOLABASIC	ISB	same as manufacturer	
F	BLST	Lighting and Power Source	LPS	Sola Ballasts	SLA
F	BLST	LUMISISTEMAS	LUM	LUMI-KON	LMK
F	BLST	LUMISISTEMAS	LUM	same as manufacturer	
F	BLST	M.W. MCWONG INTERNATIONAL	MCW	PACIFIC BALLAST	PCB
F	BLST	MAGNETEK	MTK	same as manufacturer	
F	BLST	MOTOROLA LIGHTING, INC.	MLI	same as manufacturer	
F	BLST	NATURAL LIGHTING	NLR	WORKHORSE	WHS
F	BLST	OSRAM SYLVANIA	OSL	OPTOTRONIC	OPR
F	BLST	OSRAM SYLVANIA	OSL	QUICKTRONIC	QCK
F	BLST	OSRAM SYLVANIA	OSL	OSRAM SYLVANIA	
F	BLST	PRESCOLITE CONTROLS	PCL	INTELECT BALLAST	IBL
F	BLST	RTC MARKETING CO.	RTC	same as manufacturer	
F	BLST	SUNGIL MANUFACTURING CO.	SGL	CENTURY	CY

Master Manufacturer Code List

Appliance Group Designation	Appliance Type	Manufacturer	Manufacturer Code	Brand	Brand Code
F	BLST	TAIPEI MULTIPOWER, INC.	TAI	TMP	TM
F	BLST	THOMAS INDUSTRIES	THO	THIRD GENERATION	3GN
F	BLST	TOSHIBA	TOS	same as manufacturer	
F	BLST	UNIVERSAL LIGHTING TECHNOLOGIES	ULTC	OCTEK	OCT
F	BLST	UNIVERSAL LIGHTING TECHNOLOGIES	ULTC	TRIAD	TRD
F	BLST	VALMONT ELECTRIC	VAL	ELECTRONIC	ELE
F	BLST	VALMONT ELECTRIC	VAL	MAXI-MISER II	MXM
F	BLST	VALMONT ELECTRIC	VAL	OPTI-MISER	OPM
F	BLST	VALMONT ELECTRIC	VAL	ULTRA-MISER	ULM
F	BLST	VALMONT ELECTRIC	VAL	VAL-MISER	VLM
F	BLST	VALMONT ELECTRIC	VAL	same as manufacturer	
G	HPWH	ADDISON PRODUCTS COMPANY	AP	same as manufacturer	
G	HPWH	APPLIED ENERGY RECOVERY SYSTEMS	AERS	same as manufacturer	
G	HPWH	COLMAC COIL MANUFACTURING	CCL	same as manufacturer	
G	HPWH	CRISP-AIRE	CPA	unable to verify Commission brand listing	
G	HPWH	ECR INTERNATIONAL	ECI	DUNKIRK	DUN
G	HPWH	ENVIRONMENTALLY ENGINEERED EQUIPMENT	EEQ	HEAT HARVESTER	HH
G	HPWH	NYLE SPECIAL PRODUCTS	NSP	NYLETHERM	NYL
G	HPWH	THERMA-STOR LLC	TRS	same as manufacturer	
G	HWD	ANAHEIM MFG	ANA	QUICK AND HOT	QNH
G	HWD	ELKAY	ELK	same as manufacturer	
G	HWD	EMERSON ELECTRIC COMPANY	EM	IN SINK ERATOR	ISE
G	HWD	FRANKE	FKE	LITTLE BUTLER	LLB
G	HWD	KOHLER	KL	PIPING HOT	PPH
G	HWD	WATER, INC.	WTI	EVERHOT	EVH
G	HWD	WHIRLPOOL	WH	KITCHEN AID	KA
G	HWD	WHIRLPOOL	WH	same as manufacturer	
G	HWD	WHIRLPOOL	WH	unable to verify several Commission brand listings	
G	MWH	A O SMITH WATER PRODUCTS	ASM	ENERGY SAVERS	ENV
G	MWH	A O SMITH WATER PRODUCTS	ASM	LECTROSPEED	LS
G	MWH	A O SMITH WATER PRODUCTS	ASM	NATIONAL	NA
G	MWH	A O SMITH WATER PRODUCTS	ASM	SEARS	SER
G	MWH	A O SMITH WATER PRODUCTS	ASM	same as manufacturer	
G	MWH	AMERICAN WATER HEATER CO.	AWH	PROLINE	PRLN
G	MWH	AMERICAN WATER HEATER CO.	AWH	same as manufacturer	
G	MWH	CHRONOMITE LABS	CML	INSTANT-FLOW	ISF
G	MWH	CHRONOMITE LABS	CML	same as manufacturer	

Appliance Group Designation	Appliance Type	Manufacturer	Manufacturer Code	Brand	Brand Code
G	MWH	CONTROLLED ENERGY CORP	CNE	AQUASTAR	AQU
G	MWH	CONTROLLED ENERGY CORP	CNE	ARISTON	AR
G	MWH	CONTROLLED ENERGY CORP	CNE	POWERSTREAM	PST
G	MWH	CONTROLLED ENERGY CORP	CNE	POWERSTAR	PWS
G	MWH	EEMAX	EMX	same as manufacturer	
G	MWH	EMERSON ELECTRIC	EM	IN-SINK-ERATOR	ISE
G	MWH	EMERSON ELECTRIC	EM	IN-SINK-ERATOR/KENMORE	ISE/KN
G	MWH	ENVIRO-TECH	ENW	same as manufacturer	
G	MWH	HOT AQUA INDUSTRIES, INC.	HAQ	same as manufacturer	
G	MWH	HUBBLE ELECTRIC HEATER	HEH	same as manufacturer	
G	MWH	INFINION	IFI	same as manufacturer	
G	MWH	KELTECH INC	KEL	ACUTEMP	ACU
G	MWH	LOCHINVAR CORPORATION	LVR	same as manufacturer	
G	MWH	MICROTHERM INC.	MCRM	SEISCO	SSC
G	MWH	NIAGARA INDUSTRIES	NIA	same as manufacturer	
G	MWH	PALOMA INDUSTIRES	PAL	same as manufacturer	
G	MWH	RINNAI	RNI	CONTINUUM	CNU
G	MWH	S.E.T.S. SYSTEMS, INC.	STI	same as manufacturer	
G	MWH	STIEBEL ELTRON	STBL	same as manufacturer	
G	MWH	TAKAGI	TKG	same as manufacturer	
H	TSD	ALSONS CORPORATION	ALSN	MIXET	MIX
H	TSD	AMERICAN STANDARD, INC.	AMS	PORCHER	PCH
H	TSD	AMERICAN STANDARD, INC.	AMS	same as manufacturer	
H	TSD	B & K INDUSTRIES, INC.	BK	same as manufacturer	
H	TSD	BLACK & DECKER	BD	PRICE PFISTER	PPF
H	TSD	BRASS CRAFT	BRC	PLUMB SHOP	PLM
H	TSD	CHATHAM BRASS	CB	same as manufacturer	
H	TSD	DANZE	DNZ	same as manufacturer	
H	TSD	DELTA FAUCET CO.	DF	ARTISTIC BRASS	ARB
H	TSD	DELTA FAUCET CO.	DF	MASTER PLUMBER	MP
H	TSD	DELTA FAUCET CO.	DF	same as manufacturer	
H	TSD	FRIEDRICH & ASSOCIATES	FDA	ENVIROTECH	NVT
H	TSD	FRIEDRICH GROHE AG	GRO	same as manufacturer	
H	TSD	HANSGROHE	HGR	same as manufacturer	
H	TSD	JADO BATHROOM & HARDWARE	JBH	JADO	JDO
H	TSD	KOHLER	KL	same as manufacturer	
H	TSD	KWC FAUCETS	KWC	same as manufacturer	

Master Manufacturer Code List

Appliance Group Designation	Appliance Type	Manufacturer	Manufacturer Code	Brand	Brand Code
H	TSD	MASCO	MSC	BRASSTECH	BRA
H	TSD	MELARD MANUFACTURING CORP	MLD	MELARD	MLM
H	TSD	MILWAUKEE FAUCET	MWF	BARNETT BRASS & COPPER	BBC
H	TSD	MILWAUKEE FAUCET	MWF	CAREFREE	CRE
H	TSD	MILWAUKEE FAUCET	MWF	MAINSTREAM	MNS
H	TSD	MILWAUKEE FAUCET	MWF	SEARS	SER
H	TSD	MILWAUKEE FAUCET	MWF	same as manufacturer	
H	TSD	MODERN FAUCET MFG. CO.	MFC	CHICAGO FAUCETS	CHF
H	TSD	MODERN FAUCET MFG. CO.	MFC	MODERN FAUCET	MDN
H	TSD	MOEN, INC.	MEN	same as manufacturer	
H	TSD	NEWPORT BRASS	NPB	same as manufacturer	
H	TSD	PEERLESS FAUCET	PLF	same as manufacturer	
H	TSD	PLUMBMASTER	PBM	same as manufacturer	
H	TSD	SYMMONS INDUSTRIES, INC.	SYM	same as manufacturer	
H	TSD	U.S. BRASS	USB	ELJER PLUMBINGWARE, INC.	ELR
H	TSD	U.S. BRASS	USB	SEARS	SER
H	TSD	U.S. BRASS	USB	VALLEY	VLY
H	TSD	ZIN-PLAS	ZP	GERBER PLUMBING FIXTURES	GER
H	TSD	ZIN-PLAS	ZP	KIRKHILL	KH
H	TSD	ZIN-PLAS	ZP	WOLVERINE BRASS	WVB
H	TSD	ZIN-PLAS	ZP	same as manufacturer	
I	EX	ALKCO LIGHTING	AKL	same as manufacturer	
I	EX	BEGHELLI	BGH	same as manufacturer	
I	EX	BEST LIGHTING PRODUCTS	BLP	same as manufacturer	
I	EX	BIG BEAM	BBM	same as manufacturer	
I	EX	CHLORIDE SYSTEMS	CDS	same as manufacturer	
I	EX	CONCEALITE	CCLT	same as manufacturer	
I	EX	CRESCENT STONCO	CRSS	same as manufacturer	
I	EX	DAY-BRITE	DBL	MCPHILBEN	MCP
I	EX	DMF LIGHTING	DMF	same as manufacturer	
I	EX	DUAL-LITE	DUL	same as manufacturer	
I	EX	EXITRONIX	EXX	same as manufacturer	
I	EX	HIGHLITES	HLTS	same as manufacturer	
I	EX	HYAK LIGHTING	HYK	same as manufacturer	
I	EX	ISOLITE	ISO	same as manufacturer	
I	EX	LIGHTING SUPPLY CO	LSC	same as manufacturer	
I	EX	LIGHTPANEL TECHNOLOGIES	LPT	same as manufacturer	

Master Manufacturer Code List

Appliance Group Designation	Appliance Type	Manufacturer	Manufacturer Code	Brand	Brand Code
I	EX	LITHONIA LIGHTING	LIT	same as manufacturer	
I	EX	MORLITE SYSTEMS	MRS	same as manufacturer	
I	EX	MULE EMERGENCY LIGHTING	MEL	same as manufacturer	
I	EX	PATHWAY LIGHTING PRODUCTS, INC.	PLPI	same as manufacturer	
I	EX	SIGNTEX	STX	same as manufacturer	
I	EX	SILTRON EMERGENCY SYSTEMS	SEMS	same as manufacturer	
I	EX	SIMKAR CORPORATION	SMK	same as manufacturer	
I	EX	SKYLINE LIGHTING	SKLN	same as manufacturer	
I	EX	SRB TECHNOLOGIES	SRB	same as manufacturer	
I	EX	TECHNICAL CONSUMER PRODUCTS	TCP	same as manufacturer	
I	EX	THOMAS & BETTS	THB	EMERGI-LITE	EGL
I	EX	THOMAS & BETTS	THB	LIGHTALARMS	LIA
I	EX	U.S. ENERGY TECHNOLOGIES INC.	USET	same as manufacturer	
I	TCH	Access Lighting	ACC	same as manufacturer	
I	TCH	Adesso	ADS	same as manufacturer	
I	TCH	AF Lighting*	AFL	same as manufacturer	
I	TCH	Anthony of California	ANCA	same as manufacturer	
I	TCH	Architectural Details Inc.	ARH	same as manufacturer	
I	TCH	Cal Lighting	CALT	same as manufacturer	
I	TCH	Catalina Lighting/Dana Lighting Inc*	CLI	same as manufacturer	
I	TCH	Cherry Tree Design, Inc.	CTDI	same as manufacturer	
I	TCH	Cheyenne	CYE	same as manufacturer	
I	TCH	Cristal Lighting	CRLT	same as manufacturer	
I	TCH	Dale Tiffany, Inc.	DTF	same as manufacturer	
I	TCH	Design Solutions	DGS	same as manufacturer	
I	TCH	Design Trends	DGT	same as manufacturer	
I	TCH	Designers Fountain Lighting	DFL	same as manufacturer	
I	TCH	DS Batcheller Designs	DSBD	same as manufacturer	
I	TCH	ELK Lighting	ELKL	same as manufacturer	
I	TCH	Fine Art Lamps	FAL	same as manufacturer	
I	TCH	Fire Farm Inc. Home Lighting	FFI	same as manufacturer	
I	TCH	Frederick Cooper	FDC	same as manufacturer	
I	TCH	Full Spectrum Solutions	FSS	same as manufacturer	
I	TCH	Global Lighting	GLL	same as manufacturer	
I	TCH	Good Earth	GDE	same as manufacturer	
I	TCH	Grossman	GRS	same as manufacturer	
I	TCH	Hampstead Lighting Home Lighting	HL	same as manufacturer	

Master Manufacturer Code List

Appliance Group Designation	Appliance Type	Manufacturer	Manufacturer Code	Brand	Brand Code
I	TCH	Holmes	HLM	same as manufacturer	
I	TCH	Holtkoetter Home Lighting	HHL	same as manufacturer	
I	TCH	Howard Lamp Company Home Lighting	HLC	same as manufacturer	
I	TCH	Hubbardton Forge	HUF	same as manufacturer	
I	TCH	Hunter Lighting Group	HLG	same as manufacturer	
I	TCH	Justice Design	JD	same as manufacturer	
I	TCH	Kichler	KHL	same as manufacturer	
I	TCH	LBL Lighting	LBL	same as manufacturer	
I	TCH	Lite-Source	LIS	same as manufacturer	
I	TCH	Luminaire Designs by Oz	LDO	same as manufacturer	
I	TCH	Meyda Home Lighting	MHL	same as manufacturer	
I	TCH	Minka Lavery Lighting	MLL	AMBIENCE	AMBE
I	TCH	Minka Lavery Lighting	MLL	GEORGE KOVACS HOME LIGHTING	GKH
I	TCH	Mountain Lake Home Lighting	MTN	same as manufacturer	
I	TCH	Murray Feiss	MUF	same as manufacturer	
I	TCH	Nova Lighting	NVL	same as manufacturer	
I	TCH	Nulco	NUL	same as manufacturer	
I	TCH	Pacific Coast Lighting	PAC	CABANA JOE'S	CJE
I	TCH	Pacific Coast Lighting	PAC	DICK IDOL LIGHTING	DIL
I	TCH	Pacific Coast Lighting	PAC	KATHY IRELAND HOME	KIH
I	TCH	PLC Lighting	PLCL	same as manufacturer	
I	TCH	Portfolio	PTF	same as manufacturer	
I	TCH	Progress	PRGS	same as manufacturer	
I	TCH	Quoizel	QUZ	same as manufacturer	
I	TCH	Quorum Lighting	QRL	same as manufacturer	
I	TCH	Renoma Lighting	RNL	same as manufacturer	
I	TCH	Richmond Lighting	RML	same as manufacturer	
I	TCH	SeaGull Lighting	SGLT	same as manufacturer	
I	TCH	Technical Consumer Products (TCP)	TCP	same as manufacturer	
I	TCH	The Uttermost Company	UTT	same as manufacturer	
I	TCH	Vintage Verandah	VV	same as manufacturer	
I	TCH	Westinghouse Lighting	WST	same as manufacturer	
I	TCH	World Imports	WDI	same as manufacturer	
I	TCH	Yamagiwa USA	YMG	same as manufacturer	
I	TS	ACT ONE COMMUNICATIONS INC.	AC1	same as manufacturer	
I	TS	COOPER LIGHTING GROUP	CPL	same as manufacturer	
I	TS	DIALIGHT	DL	same as manufacturer	

Master Manufacturer Code List

Appliance Group Designation	Appliance Type	Manufacturer	Manufacturer Code	Brand	Brand Code
I	TS	ELECTRO-TECH	ET	same as manufacturer	
I	TS	EXCELLENCE OPTOELECTRONICS, INC. (EOI)	EX	same as manufacturer	
I	TS	GENERAL ELECTRIC	GE	GELCORE, LLC.	GCR
I	TS	LEDTRONICS, INC.	LED	same as manufacturer	
I	TS	LEOTECH ELECTRONICS USA CORP.	LEO	same as manufacturer	
I	TS	MCCAIN TRAFFIC SUPPLIES	MCN	same as manufacturer	
I	TS	PRECISION SOLAR CONTROLS	PRS	same as manufacturer	
J	TRS	ACME ELECTRIC CORP.	ACM	same as manufacturer	
J	TRS	ARGES TECHNOLOGIES, INC.	ART	same as manufacturer	
J	TRS	CUTLER-HAMMER	CRH	same as manufacturer	
J	TRS	DONGAN ELECTRIC MFG. CO.	DEM	same as manufacturer	
J	TRS	FEDERAL PACIFIC	FEP	same as manufacturer	
J	TRS	GE INDUSTRIAL SYSTEMS	GEI	GE DISTRIBUTION TRANSFORMERS	GEDT
J	TRS	HAMMOND POWER SOLUTIONS, INC.	HMM	same as manufacturer	
J	TRS	HITRAN CORPORATION	HIT	same as manufacturer	
J	TRS	JEFFERSON ELECTRIC INC.	JFE	same as manufacturer	
J	TRS	MARCUS TRANSFORMER OF CANADA, LTD.	MCS	same as manufacturer	
J	TRS	MGM TRANSFORMER COMPANY	MGM	same as manufacturer	
J	TRS	REX POWER MAGNETICS	RXP	same as manufacturer	
J	TRS	SCHNEIDER ELECTRIC	SE	SQUARE D COMPANY	SQD
J	TRS	SIEMENS ENERGY & AUTOMATION	SIE	same as manufacturer	
J	TRS	SOLA/HEVI-DUTY	SHD	same as manufacturer	
K	CompAC	AIR TECHNOLOGY SYSTEMS	ATS	CYBERAIR	CBA
K	CompAC	AIRFLOW COMPANY	AIR	same as manufacturer	
K	CompAC	APC	APC	NETWORKAIR	NTA
K	CompAC	COMPU-AIRE	CA	COMPUKOOL	CPK
K	CompAC	COMPU-AIRE	CA	MINI TEMP PLUS	MNP
K	CompAC	COMPU-AIRE	CA	MINI TEMP	MNT
K	CompAC	COMPU-AIRE	CA	same as manufacturer	
K	CompAC	CONTEMPO ENGINEERING	CTO	same as manufacturer	
K	CompAC	DATA AIRE, INC.	DTI	same as manufacturer	DTA
K	CompAC	DATA AIRE, INC.	DTI	MINI 2000	MN2
K	CompAC	EMERSON NETWORK POWER	EMNP	LIEBERT HIROSS	LEBH
K	CompAC	HIROSS INC.	HIR	same as manufacturer	
K	CompAC	IPAC, INC.	IPI	same as manufacturer	
K	CompAC	LIEBERT	LEB	same as manufacturer	
K	CompAC	MESTEK	MSK	KOLDWAVE	KDM

Master Manufacturer Code List

Appliance Group Designation	Appliance Type	Manufacturer	Manufacturer Code	Brand	Brand Code
K	CompAC	PERIPHERAL MANUFACTURING, INC.	PEM	same as manufacturer	
K	CompAC	POMONA AIR	PMA	same as manufacturer	
K	CompAC	STULTZ AIR TECHNOLOGY SYSTEMS	ATS	AIR TECHNOLOGY SYSTEMS	ATS
K	CompAC	STULTZ AIR TECHNOLOGY SYSTEMS	ATS	CYBERAIR	CBA
K	CompAC	STULTZ AIR TECHNOLOGY SYSTEMS	ATS	CEILAIR	CER
K	CompAC	STULTZ AIR TECHNOLOGY SYSTEMS	ATS	FLAIR	FL
K	CompAC	STULZ AMERICA	STA	same as manufacturer	
K	CompAC	TEMP-AIR	TMPA	same as manufacturer	
K	CompAC	TITHE CORPORATION	TTH	AMTECH	ATK
K	CompAC	TITHE CORPORATION	TTH	KAIS-AIRE	KI
K	CompAC	TITHE CORPORATION	TTH	SKIL-AIRE	SK
K	GSHP	ADDISON PRODUCTS	APC	same as manufacturer	
K	GSHP	AMERICAN GEOTHERMAL DX	ADX	same as manufacturer	
K	GSHP	AMERICAN STANDARD	AMS	same as manufacturer	
K	GSHP	AMERICAN STANDARD	AMS	TRANE	TR
K	GSHP	BARD	BA	same as manufacturer	
K	GSHP	CLIMATE MASTER	CLM	CLIMATE MASTER SERIES	CMS
K	GSHP	CLIMATE MASTER	CLM	same as manufacturer	
K	GSHP	ECONAR	ECR	same as manufacturer	
K	GSHP	FLORIDA HEAT PUMP	FHP	same as manufacturer	
K	GSHP	GEOCOMFORT	GCM	same as manufacturer	
K	GSHP	HONG LEONG GROUP MALAYSIA	HLGM	MCQUAY INTERNATIONAL	MCQ
K	GSHP	HYDRON MODULE	HDN	same as manufacturer	
K	GSHP	MAMMOTH	MAM	same as manufacturer	
K	GSHP	MAMMOTH	MAM	HYDROBANK	HYB
K	GSHP	WATERFURNACE INT'L., INC.	WTF	same as manufacturer	
K	GWSHP	ADDISON PRODUCTS	APC	same as manufacturer	
K	GWSHP	BARD	BA	same as manufacturer	
K	GWSHP	CLIMATE MASTER	CLM	CLIMATE MASTER SERIES	CMS
K	GWSHP	CLIMATE MASTER	CLM	same as manufacturer	
K	GWSHP	ECONAR	ECR	same as manufacturer	
K	GWSHP	FLORIDA HEAT PUMP	FHP	same as manufacturer	
K	GWSHP	HONG LEONG GROUP MALAYSIA	HLGM	MCQUAY INTERNATIONAL	MCQ
K	GWSHP	HYDRON MODULE	HDN	same as manufacturer	
K	GWSHP	WATERFURNACE INT'L., INC.	WTF	same as manufacturer	
K	SpotAC	ADAPT	ADT	same as manufacturer	
K	SpotAC	AIR ROVER	AR	same as manufacturer	

Master Manufacturer Code List

Appliance Group Designation	Appliance Type	Manufacturer	Manufacturer Code	Brand	Brand Code
K	SpotAC	AMBIANCE	AMBI	same as manufacturer	
K	SpotAC	AMCOR	AMC	same as manufacturer	
K	SpotAC	COLD AIR PRODUCTS	CDAP	same as manufacturer	
K	SpotAC	COMPU-AIRE	CA	MINI-TEMP	MNT
K	SpotAC	CONTINENTAL	CON	same as manufacturer	
K	SpotAC	DANBY	DBY	same as manufacturer	
K	SpotAC	DELONGHI	DGI	same as manufacturer	
K	SpotAC	EGANG COMPANY, LTD.	EGN	FREECOM	FRC
K	SpotAC	FUJITRONIC	FUJ	same as manufacturer	
K	SpotAC	GE	GE	same as manufacturer	
K	SpotAC	HAIER	HAI	same as manufacturer	
K	SpotAC	KENWOOD	KEN	same as manufacturer	
K	SpotAC	KWIKOOL	KWK	same as manufacturer	
K	SpotAC	MESTEK	MSK	KOLDWAVE	KDM
K	SpotAC	MOBIL AIR INC.	MBA	same as manufacturer	
K	SpotAC	NIPPONDENSO OF L.A.	NLA	MOVIN COOL	MVC
K	SpotAC	ROYAL SOVEREIGN	RYS	same as manufacturer	
K	SpotAC	SOLEUS AIR	SOA	same as manufacturer	
K	SpotAC	SPOT COOLERS	SPO	same as manufacturer	
K	SpotAC	SUNPENTOWN	SNP	same as manufacturer	
K	SpotAC	TOYOTOMI	TYT	same as manufacturer	
K	SpotAC	UNIVERSAL	UV	GENIE AIRE	GEA
K	SpotAC	UNIVERSAL	UV	WINDCHASER	WCH
K	SpotAC	UNIVERSAL	UV	FEDDERS	
K	SpotAC	VIRCO ASSOCIATES, INC.	VAI	PROMAC	PMC
L	NPB	BRYAN STEAM CORPORATION	BSC	DUNKIRK	DUN
L	NPB	BUDERUS	BUD	same as manufacturer	
L	NPB	BURNHAM HYDRONICS	BHD	same as manufacturer	
L	NPB	CARRIER CORPORATION	CRP	same as manufacturer	
L	NPB	COLUMBIA BOILER	CBP	same as manufacturer	
L	NPB	ENERGY KINETICS	EKI	same as manufacturer	
L	NPB	MESTEK	MSK	HYDROTHERM	HYM
L	NPB	MESTEK	MSK	SMITH CAST IRON BOILERS	SCI
L	NPB	MESTEK	MSK	same as manufacturer	
L	NPB	PEERLESS BOILERS	PSB	same as manufacturer	
L	NPB	SLANT/FIN CORPORATION	SLF	same as manufacturer	
L	NPB	UTICA BOILERS	UTI	same as manufacturer	

Master Manufacturer Code List

Appliance Group Designation	Appliance Type	Manufacturer	Manufacturer Code	Brand	Brand Code
L	NPB	VIESSMANN MANUFACTURING	VIE	same as manufacturer	
L	NPB	WEIL-MCLAIN	WMC	same as manufacturer	
M	GSF	AMANA REFRIGERATION INC.	AMA	no small gas furnaces	
M	GSF	AMERICAN STANDARD	AMS	FREEDOM	FRE
M	GSF	AMERICAN STANDARD	AMS	TRANE UNITARY PROD. GROUP	TR
M	GSF	BARD	BA	same as manufacturer	
M	GSF	CARRIER CORPORATION	CRS	BRYANT	BRY
M	GSF	CARRIER CORPORATION	CRS	CARRIER	CR
M	GSF	CARRIER CORPORATION	CRS	PAYNE	PA
M	GSF	DUCANE	DU	same as manufacturer	
M	GSF	GOETTL	GT	same as manufacturer	
M	GSF	GOETTL	GT	AMERICAN BEST	ABS
M	GSF	GOODMAN MANUFACTURING CO.	GMC	JANITROL	JA
M	GSF	GOODMAN MANUFACTURING CO.	GMC	KENMORE CENTRAL HEAT/COOL	KCH
M	GSF	GOODMAN MANUFACTURING CO.	GMC	GOODMAN	GMN
M	GSF	INT'L COMFORT PRODUCTS	ITL	ARCOAIRE	ARA
M	GSF	INT'L COMFORT PRODUCTS	ITL	COMFORTMAKER	CFM
M	GSF	INT'L COMFORT PRODUCTS	ITL	HEIL	HE
M	GSF	INT'L COMFORT PRODUCTS	ITL	TEMPSTAR	TEM
M	GSF	LENNOX	LN	same as manufacturer	
M	GSF	LENNOX	LN	ARMSTRONG	AG
M	GSF	LENNOX	LN	MCQUAY	MCQ
M	GSF	NORDYNE	NDY	WESTINGHOUSE	WST
M	GSF	RHEEM	RHM	same as manufacturer	
M	GSF	RHEEM	RHM	RUUD	RUD
M	GSF	RHEEM	RHM	AMANA	AMA
M	GSF	RHEEM	RHM	WEATHERKING	WK
M	GSF	YORK INTERNATIONAL	YKI	BASIS	BAS
M	GSF	YORK INTERNATIONAL	YKI	BASIS BY LUXAIRE	BLU
M	GSF	YORK INTERNATIONAL	YKI	CHOICE BY YORK	CBY
M	GSF	YORK INTERNATIONAL	YKI	CUSTOM BY COLEMAN EVCON	CCE
M	GSF	YORK INTERNATIONAL	YKI	CHOICE	CHC
M	GSF	YORK INTERNATIONAL	YKI	COLEMAN	CM
M	GSF	YORK INTERNATIONAL	YKI	CUSTOM	CUS
M	GSF	YORK INTERNATIONAL	YKI	FRASER JOHNSTON	FJ
M	GSF	YORK INTERNATIONAL	YKI	LUXAIRE	LU
M	GSF	YORK INTERNATIONAL	YKI	PROFLO AIRE	PFA

Master Manufacturer Code List

Appliance Group Designation	Appliance Type	Manufacturer	Manufacturer Code	Brand	Brand Code
M	GSF	YORK INTERNATIONAL	YKI	YORK	YK

Appendix B

Original List of Refrigerator Types

Categories of Commercial Refrigerator/Freezer Products

Food Service
Chef Bases
Preparation Tables/Counter Top/Work top
Fountainettes
Sandwich / Salad Preparation Tables
Deli / Pizza Preparation Tables
Even-Thaw Refrigerators
Fish/Poultry File Refrigerators
Refrigerated Salad Bar
Mobile Refrigerators/Freezers
Lettuce Crispers
Mobile Refrigerated Well Tables
Mobile Frost-Top Tables
Soft Serve / Yogurt / Custard Dispensing Freezers
Sorbet / Ice Cream Dispensing Freezer

Reach-in Refrigerators & Freezers
Upright Reach-ins
Reach-in Refrigerators
Reach-in Freezers
Bottom Mount
Top Mount
Dual Temps
Pass-Thru
Roll-in & Roll-thru

Display Merchandisers
Glass Door
Air Curtain
Vertical
Deli Cases
Bakery Cases
Horizontal Freezers
Display Cases
Ice Cream Freezers
Marketeers
      Hinge Door
      Slide Door
      Special Applications
      Curved Glass
Merchandisers and Display Cabinets
      Glass Door Freezers & Refrigerators
      Countertop Merchandisers
      Horizontal Display Cases
Revolving Merchandisers
Ice Cream, Frozen Food & Dairy

Deli, Dairy & Sandwich
Open Display
Island
Endless
Open Air Rear Load
Wall Floral Display Case

Bar
Underbar Refrigeration
Horizontal Bottle Coolers
Back Bar Coolers
Direct Draw Dispensers
Underbar Freezers
Beer Dispensing and Back Bar Equipment
Deep Well Bottle Coolers and Glass Frosters
Back Bar Refrigerators
Direct Draw Beers Refrigerators & Barmobiles
Wine Coolers
Keg Coolers
Rearfeed Coolers
Reach-in Mug Chillers
Slide Top Coolers and Mug Frosters
Beer Line Chillers
Remote Soda Line Chillers

Miscellaneous
Walk-ins
Chest Freezers
Base Mount Freezers
Step-in Coolers & Freezers
Ice Machine
Ice Dispensers
Blast Chillers
Undercounter/Worktops
Worktop & Undercounter Refrigerators & Freezers
Beverage Coolers
Milk Coolers
School Milk Coolers
  Cold Wall
  Forced Air
Beverage Dispensing Freezers

Appendix C

Streamlined List of Refrigerator Types

Categories of Commercial Refrigerators and Freezers

1. Bar

Back Bar Cooler
      Glass Door
      Pass Thru
      Remote
      Rear Feed

Beer Dispenser
      Direct Draw
      Portable

Beer Line Chiller
      Remote- Draft
      Remote- Pre Mix

Beverage Center
      Remote- Pre Mix

Beverage Remote System

Bottle Cooler
      Horizontal

Cocktail Station

Direct Draw Dispenser

Keg Cooler

Mug Froster
      Slide Top

Wine Cooler
      Undercounter
      Spacesaver

2. Display Merchandiser
All have either a glass door or open front so merchandise can be seen

Air Curtain
      Rear Load

Back Bar Cooler

Countertop
      Drop In
      Self-Service

Categories of Commercial Refrigerators and Freezers

Display Case
> Back to Back /& End
> Combination (refers to RF Heat units)
> Corner
> Curved Front
> Drop In
> End
> Extended Height
> Extra Wide
> Glass Sides
> High Capacity
> High Volume
> High Performance
> Horizontal
> Indoor
> Lift Glass/Front
> Narrow
> Outdoor
> Pass thru
> Rear Discharge
> Revolving
> Self-Service
> Wall Mount
> Waterfall

Island
> Narrow
> Wide
> Jumbo

Open Display (Self-Service)

Open Top (Self-Service)

Open Well (Self-Service)

Pass Thru
> Narrow
> Self-Service
> Wide

Reach In
> Back to Back
> Bottom Mount Compressor
> D-Width
> Extra Wide
> Narrow

Categories of Commercial Refrigerators and Freezers

Reach In
       Narrow Depth
       Sliding Door
       Wide

Revolving

Roll In
       Front Load
       Rear Load

Slide Top
       Deep Well
       Horizontal

Wine Cooler

Work Top
       Front Breather

3. Food Service

Beverage Cooler
       Air Curtain
       Beverage Dispenser
       Milk Cooler
       Milk Dispenser
       Cream Dispenser
       Free Standing

Blast Chiller
       Reach In
       Roll In
       Roll Thru
       Undercounter
       Upright

Built-In
       Beverage Cooler
       Milk/Ice Cream Dispenser

Chef Base
       Compact

Chilled Glass/Mug/Plate Dispenser
       Built In
       Drop In
       Mobile
       Slide Top

Categories of Commercial Refrigerators and Freezers

Countertop
> Condiment Rail
> Cooking Equipment Stand

Dipping Cabinet
> Stand Alone
> Storage
> Underbar

Dispenser

Drop In

Food Bar
> Air Curtain
> Cold Pan
> Drop In
> Hot/Cold Pan
> Mobile Serving Counter

Frost Top
> Drop In
> Mobile Serving Counters

Ice Machine

Lettuce Crisper

Mobile
> Cart

Prep Table
> Countertop Only
> Drawered
> Mega Top

Rapid Chiller

Rapid Thaw
> Roll In

Reach In

Retarders
> Bakery
> Roll In

Categories of Commercial Refrigerators and Freezers

Work Top
> Compact
> Cooking Equipment Stand
> Griddlestand
> Fish/Poultry File

4. Miscellaneous

Chest Freezer

Cooler
> Front Venting
> Low Profile
> Narrow Door
> Pass Thru

Glass Door
> Roll In
> Roll Thru

Roll In
> Double Depth
> Extra High

Roll In
> Heated
> Pass Thru
> Self-Contained

Roll Thru
> Double Depth
> Fire Rated
> Heated
> Self-Contained

Step In

Undercounter
> Compact

Undercounter
> Drawered
> Full Size
> Glass Door
> Heavy Duty
> Recessable
> Spacesaver

Categories of Commercial Refrigerators and Freezers

Undercounter/Work Top
Cold Wall
Forced Air

Walk In

Work Top

5. Reach In Refrigerators & Freezers

Air Curtain

Glass Door
Extra Wide
Narrow
Pass Thru

Pass Thru
Combo Doors
Extra Wide
Heated
Narrow

Pass Thru
Self-Contained
Shallow Depth
Wide

Reach In
Bottom Mount Compressor
Bottom Freezer
Combination/Combo Doors
Convertible
Extra Wide
D- Width
Double Door – 1 Side

Reach In
Glass Panel
Half Glass Door
Narrow Body
Rapid Thaw
Self-Contained
Shallow
Slim Line
Spacesaver
SXS (Side by Side)
Top Mount Compressor

Appendix D

Refrigerator Types Corresponding Pictures

Categories of Commercial Refrigerators and Freezers

1. Bar

Back Bar Cooler
Glass Door

Pass Thru

Remote

Rear Feed

Beer Dispenser
Direct Draw

Portable

Beer Line Chiller
Remote- Draft

Remote- Pre Mix

Beverage Center

Remote- Pre Mix

Beverage Remote System

Bottle Cooler
Horizontal

Bar, cont.

Cocktail Station

Direct Draw Dispenser

Keg Cooler

Mug Froster
Slide Top

Wine Cooler
Undercounter

Spacesaver

2. Display Merchandiser
All have either a glass door or open front so merchandise can be seen

Air Curtain

Rear Load

Back Bar Cooler

Countertop
Drop In

Self-Service

Display Case
Back to Back /& End

Combination (refers to RF Heat units)
(no image available)

Corner

Curved Front

Drop In

Display Merchandiser, cont.

Display Case

End

Extended Height
(No image found)

Extra Wide

Glass Sides

High Capacity

High Volume

High Performance

Horizontal

Indoor

Display Merchandiser, cont.

Display Case

Lift Glass/Front

Narrow

Outdoor

Pass thru

Rear Discharge

Revolving

Self-Service

Wall Mount
(No image found)

Waterfall
(No image found)

Island

Narrow

Wide

Jumbo
(No image found)

Display Merchandiser, cont.

Open Display (Self-Service)

Open Top (Self-Service)

Open Well (Self-Service)

Pass Thru
    Narrow

    Self-Service

Wide

Reach In
Back to Back
(No image found)

Bottom Mount Compressor

D-Width
(No image found)

Extra Wide

Narrow

Display Merchandiser, cont.

Reach In
    Narrow Depth

    Sliding Door

    Wide

Revolving

Roll In
    Front Load

    Rear Load
    (No image found)

Slide Top
    Deep Well

    Horizontal

Wine Cooler

Work Top
    Front Breather
    (No image found)

3. Food Service

Beverage Cooler
Air Curtain

Cream Dispenser

Beverage Dispenser

Free Standing

Milk Cooler

Blast Chiller
Reach In

Milk Dispenser

Roll In

Food Service, cont.

Blast Chiller

Roll Thru

Undercounter

Upright

Built-In
Beverage Cooler

Milk/Ice Cream Dispenser

Chef Base
Compact

Chilled Glass/Mug/Plate Dispenser

Built In

Drop In

Mobile
(No image found)

Slide Top

Food Service, cont.

Countertop
Condiment Rail

Cooking Equipment Stand
(No image found)

Dipping Cabinet
Stand Alone

Storage

Underbar

Dispenser

Drop In

Food Bar
Air Curtain
(No image found)

Cold Pan

Drop In

Hot/Cold Pan

Model # R3H3CM shown with optional slopped
front cafeteria style protector guard.

Mobile Serving Counter

Food Service, cont.

Frost Top

Drop In

Mobile Serving Counters

Ice Machine

Lettuce Crisper

Mobile

Cart

Prep Table

Countertop Only

Drawered

Mega Top

Rapid Chiller

Food Service, cont.

Rapid Thaw
Roll In

Reach In

Retarders
Bakery

Roll In

Work Top
Compact

Cooking Equipment Stand
(No image found)

Griddlestand

Fish/Poultry File

4. Miscellaneous

Chest Freezer

Cooler

Front Venting

Low Profile
(No image found)

Narrow Door

Pass Thru

Glass Door

Roll In

Roll Thru

Roll In

Double Depth

Extra High
(No image found)

Miscellaneous, cont.

Roll In

Heated

Pass Thru

Self-Contained

Roll Thru

Double Depth

Fire Rated

Heated

Self-Contained

Step In
(No image found)

Undercounter

Compact

Miscellaneous, cont.

Undercounter

Drawered

Full Size

Glass Door

Heavy Duty

Recessable

Spacesaver

Undercounter/Work Top

Cold Wall

White Cabinet
with White Door & Lock

Forced Air

Walk In

Work Top

5. Reach In Refrigerators & Freezers

Air Curtain

Combo Doors

Glass Door

Extra Wide

Extra Wide

Heated

Narrow

Pass Thru

Narrow

Pass Thru

Reach In Refrigerators & Freezers, cont.

Pass Thru
Self-Contained

Bottom Freezer

Shallow Depth

Combination/Combo Doors

Wide

Convertible

Reach In
Bottom Mount Compressor

Extra Wide

D- Width
(No image found)

Double Door – 1 Side
(No image found)

Reach In Refrigerators & Freezers, cont.

Reach In

Glass Panel

Shallow

Half Glass Door

Slim Line

Narrow Body

Spacesaver

Rapid Thaw

SXS (Side by Side)

Self-Contained

Top Mount Compressor

Appendix E

Group A – Database Printouts

Appendix F

Group B – Database Printouts

Appendix G

Group C – Database Printouts

Appendix H

Group D – Database Printouts

Appendix I

Group E – Database Printouts

Appendix J

Group F – Database Printouts

Appendix K

Group G – Database Printouts

Appendix L

Group H – Database Printouts

Appendix M

Group I – Database Printouts

(Please refer to the Draft Final Report: Appendix M for the printouts for Exit Signs)

Appendix N

Group J – Database Printouts

Appendix O

Group K – Database Printouts

Appendix P

Group L – Database Printouts

Appendix Q

Group M – Database Printouts

Appendix R

Site Visit Information